

**SAFETY COMPLIANCE TESTING FOR FMVSS 201U**  
**Occupant Protection In Interior Impact**  
**Upper Interior Head Impact Protection**

**NEW UNITED MOTOR MANUFACTURING, INC.**  
**2003 Pontiac Vibe 4-Door SUV**  
**NHTSA No. C30105**

**MGA RESEARCH CORPORATION**  
**446 Executive Drive**  
**Troy, Michigan 48063**



**Test Dates: December 10-11, 2002**  
**Report Date: December 12, 2002**

**FINAL REPORT**

**PREPARED FOR:**

**U.S. DEPARTMENT OF TRANSPORTATION**  
**NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION**  
**SAFETY ASSURANCE**  
**OFFICE OF VEHICLE SAFETY COMPLIANCE**  
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**WASHINGTON, D.C. 20590**

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16. Abstract A compliance test was conducted on the subject 2003 Pontiac Vibe 4-Door SUV, NHTSA No. C30105, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-201U-01 for the determination of FMVSS 201U compliance. The test was conducted at the MGA Research Corporation in Troy, Michigan on December 10-11, 2002. Test failures identified were as follows:  <p align="center">NONE</p> The data recorded seems to indicate that the 2003 Pontiac Vibe 4-Door SUV tested appears to comply with the requirements for FMVSS 201U which were set forth by the National Highway Traffic Safety Administration.			
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## **1.0 PURPOSE OF COMPLIANCE TEST**

The purpose of this head impact compliance test was to determine whether the subject vehicle, a 2003 Pontiac Vibe 4-Door SUV, meets the performance requirements of FMVSS 201U, Occupant Protection in Interior Impact - Upper Interior Head Impact Protection.

Tests were conducted during December 10-11, 2002 on a 2003 Pontiac Vibe 4-Door SUV, manufactured by New United Motor Manufacturing, Inc.

All tests were conducted in accordance with the U. S. Department of Transportation, National Highway Traffic Safety Administration's Laboratory Test Procedure TP-201U-01 dated April 3, 1998 and the corresponding MGA Research Corporation's FMVSS 201U procedure number MGATP201U\_FRAME#2 dated October 18, 2001.

All tests were conducted at MGA Research Corporation in Troy, Michigan and were performed by MGA engineers and technicians. The FMVSS 201U Impactor test machine was used to conduct the testing. Target locations were determined by using a Coordinate Measurement Machine in conjunction with the MGA EZ-Target<sup>®</sup> program and MGA procedure MGATP201U\_Test Series dated September 20, 2002.

## **2.0 COMPLIANCE TEST DATA SUMMARY**

The 2003 Pontiac Vibe 4-Door SUV was equipped with A, B, C and D-Pillars, an adjustable seat belt anchorage on each B-Pillar, a fixed seat belt anchorage on each C-Pillar, a grab handle above the front passenger door opening and one above each rear door opening, a sunroof control console, and three headliner lights.

Upon completion of targeting the test vehicle, ten (10) targets were chosen to be impacted based upon engineering judgement and certification test data provided by General Motors. Targets were chosen which appeared most likely to give high HIC(d) values. The ten (10) targets chosen were:

AP1	BP1	SR1	UR4
AP2	BP2	SR2A	
AP3	OP1	UR2	

The 2003 Pontiac Vibe 4-Door SUV tested appears to comply with the performance criteria for FMVSS 201U. The HIC(d) measured using the Part 572L (Free Motion Headform) was below 1000 for each tested component.

TABLE 2-1  
SUMMARY TABLE OF TEST RESULTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Pontiac Vibe 4-Door SUV

VEH. NHTSA NO.: C30105 VIN: 5Y2SL62833Z440235 COLOR: Red

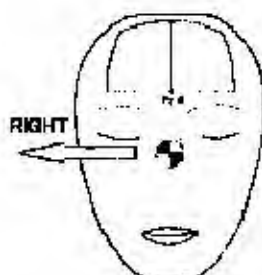
VEH. BUILD DATE: September, 2002 TEST DATE: December 10-11, 2002

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Michael Smith, David Gotwals

TARGET	VEHICLE SIDE	HORIZONTAL ANGLE (deg)	VERTICAL ANGLE (deg)	VELOCITY (kph)	HIC(d)	FMH HIC	IMPACT ON FMH (mm)	
							Above	Left/Right
AP1	Right	132	26	23.9	612	591	14	22 Right
AP2	Left	201	49	23.7	389	295	7	10 Left
AP3	Right	159	44	23.9	468	400	5	4 Left
BP1	Right	90	20	23.7	623	605	75	8 Left
BP2	Right	90	4	23.9	551	510	3	2 Left
OP1	Right	90	6	23.8	512	458	8	2 Right
SR1	Left	270	31	23.6	469	401	17	2 Right
SR2A	Left	270	33	23.8	578	546	10	2 Left
UR2	Left	270	34	23.7	491	431	46	1 Left
UR4	Right	90	50	23.7	615	594	34	3 Left

Above and left/right refers to the position relative to reference pt. 0 where the target made contact with the Free Motion Headform. See the diagram below for details.



**POST TEST COMMENTS:**

The following description lists any post-test damage or other test observations for each target.

AP2 Left: The trim popped off the pillar during the test.

AP3 Right: The trim popped off the pillar during the test.

BP2 Right: The D-ring was compressed into the pillar during the test.

OP1Right: The D-ring was compressed into the pillar during the test.

No damage was observed for any other targets.

**REMARKS:**

The targets listed were impacted in the following order:

Right: AP3, AP1, BP2, BP1, UR4, OP1

Left: AP2, SR1, SR2A, UR2

The 150 mm rule was observed for targets horizontal to each other and the 200 mm rule was observed for vertical components.

RECORDED BY: David G. Gotwals

DATE: December 10, 2002

APPROVED BY: Helen A. Kalet

TABLE 2-2  
GENERAL TEST AND VEHICLE PARAMETER DATA

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Pontiac Vibe 4-Door SUV

VEH. NHTSA NO.: C30105 VIN: 5Y2SL62833Z440235 COLOR: Red

VEH. BUILD DATE: September, 2002 TEST DATE: December 10-11, 2002

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Michael Smith, David Gotwals

INTERIOR TRIM INFORMATION: A, B, C and D-Pillars, an adjustable seat belt anchorage on each B-Pillar, a fixed seat belt anchorage on each C-Pillar, a grab handle above the front passenger door opening and one above each rear door opening, a sunroof control console, and three headliner lights.

SUNROOF INFORMATION:

Installed: X Yes      No  
Operation: X Electric      Manual

ROLL-BAR INFORMATION:

Installed:      Yes X No  
Padded:      Yes X No  
Braces:      Yes X No

GENERAL INFORMATION:

Date Received: October 30, 2002; Odometer Reading: 23 miles

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: New United Motor Manufacturing, Inc.

Date of Manufacture: September, 2002; VIN: 5Y2SL62833Z440235

GVWR: 1744.0 kg; GAWR FRONT: 914.0 kg

GAWR REAR: 839.0 kg

**DATA FROM TIRE PLACARD:**

Tire Pressure with Maximum Capacity Vehicle Load:

FRONT: 220 kpa      REAR: 220 kpaRecommended Tire Size: P205/55R16

Recommended Cold Tire Pressure:

FRONT: 220 kpa      REAR: 220 kpaSize of Tire on Test Vehicle: P205/55R16Type of Spare Tire: T135/80R16;      Space Saver: X;      Standard:     **VEHICLE CAPACITY DATA:**Type of Front Seats:      Bench     ;      Bucket X;      Split Bench     Number of Occupants:      Front 2;      Rear 3;      TOTAL 5VEHICLE CAPACITY WEIGHT (VCW) = 390 kgNo. of Occupants x 68 kg = 340 kgRated Cargo/Luggage Weight (RCLW) = 50 kg (difference)**WEIGHT OF TEST VEHICLE AS DELIVERED AT LABORATORY: (with maximum fluids)**Right Front = 351.5 kg      Right Rear = 255.5 kgLeft Front = 347.0 kg      Left Rear = 262.5 kgTOTAL FRONT = 698.5 kg      TOTAL REAR = 518.0 kg% Total Weight = 57.4 %      % Total Weight = 42.6 %TOTAL DELIVERED WEIGHT = 1216.5 kg**CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:**Total Delivered Weight = 1216.5 kgRated Cargo/Luggage Wt. = 50.0 kgTARGET TEST WEIGHT 1266.5 kg

**WEIGHT OF TEST VEHICLE:**

Right Front =	<u>352.5</u> kg	Right Rear =	<u>272.5</u> kg
Left Front =	<u>348.0</u> kg	Left Rear =	<u>291.0</u> kg
TOTAL FRONT =	<u>700.5</u> kg	TOTAL REAR =	<u>563.5</u> kg
% Total Weight =	<u>55.4</u> %	% Total Weight =	<u>44.6</u> %
TOTAL TEST WEIGHT = <u>1264.0</u> kg			
Weight of ballast secured in vehicle's cargo area = <u>47.5</u> kg			

**TEST VEHICLE ATTITUDE:**

AS DELIVERED: Right Front 722 mm; Left Front 722 mm;  
 Right Rear 721 mm; Left Rear 723 mm;  
 Pitch Angle at Right Door Sill = 0.1° rear higher  
 Pitch Angle at Left Door Sill = 0.1° rear higher  
 Roll Angle at Front Bumper = 0.4° right higher  
 Roll Angle at Rear Bumper = 0.1° right higher

FULLY LOADED: Right Front 725 mm; Left Front 723 mm;  
 Right Rear 711 mm; Left Rear 712 mm;  
 Pitch Angle at Right Door Sill = 0.0°  
 Pitch Angle at Left Door Sill = 0.1° rear higher  
 Roll Angle at Front Bumper = 0.5° right higher  
 Roll Angle at Rear Bumper = 0.1° right higher

**AS TARGETED:**

Pitch Angle at Right Door Sill = 0.1° rear higher  
 Pitch Angle at Left Door Sill = 0.1° rear higher  
 Roll Angle at Front Bumper = 0.5° right higher  
 Roll Angle at Rear Bumper = 0.1° right higher



## AS TESTED (Targets Impacted on Right Side):

Pitch Angle at Right Door Sill = 0.1° rear higherPitch Angle at Left Door Sill = 0.1° rear higherRoll Angle at Front Bumper = 0.5° right higherRoll Angle at Rear Bumper = 0.1° right higher

## AS TESTED (Targets Impacted on Left Side):

Pitch Angle at Right Door Sill = 0.0°Pitch Angle at Left Door Sill = 0.1° rear higherRoll Angle at Front Bumper = 0.5° right higherRoll Angle at Rear Bumper = 0.1° right higherVEHICLE WHEELBASE = 2600 mm

REMARKS: The seat travel distance was measured to be 239 mm for the driver and passenger front seats.

RECORDED BY: David G. GotwalsDATE: December 10, 2002APPROVED BY: Helen A. Kalato

**TABLE 2-3**  
**HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS**

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Pontiac Vibe 4-Door SUV

VEH. NHTSA NO.: C30105 VIN: 5Y2SL62833Z440235 COLOR: Red

VEH. BUILD DATE: September, 2002 TEST DATE: Decemer 10-11, 2002

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Michael Smith, David Gotwals

**HORIZONTAL IMPACT ANGLE RANGE FOR A AND B PILLARS**

	<b>HORIZONTAL ANGLE SPECIFIED RANGE</b>	<b>MINIMUM HORIZONTAL ANGLE</b>	<b>MAXIMUM HORIZONTAL ANGLE</b>
<b>A-PILLAR</b>	L 195°-255°	L 200.5°	L 248.3°
	R 105°-165°	R 111.7°	R 159.3°
<b>B-PILLAR</b>	L 195°-345°	L 198.9°	L 276.2°
	R 15°-165°	R 83.4°	R 161.0°

AS DETERMINED USING THE PROCEDURES SPECIFIED IN S8.13.4.1

REMARKS:

RECORDED BY: David G. Gotwals

DATE: December 10, 2002

APPROVED BY: Helen A. Kaleta

TABLE 2-4

## VERTICAL IMPACT ANGLE RANGES

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Pontiac Vibe 4-Door SUVVEH. NHTSA NO.: C30105 VIN: 5Y2SL62833Z440235 COLOR: RedVEH. BUILD DATE: September, 2002 TEST DATE: December 10-11, 2002TEST LABORATORY: MGA Research CorporationOBSERVERS: Michael Smith, David Gotwals

## VERTICAL IMPACT ANGLE RANGES

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
FRONT HEADER	FH1	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
	FH2	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
SIDE RAIL	SR1	L 0°-50°	L 0°	L 31°
		R 0°-50°	R 0°	R 31°
	SR2A	L 0°-50°	L 0°	L 33°
		R 0°-50°	R 0°	R 42°
	SR2B	L 0°-50°	L 0°	L 29°
		R 0°-50°	R 0°	R 50°
	SR3A	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
	SR3B	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
	SR3C	L 0°-50°	L 0°	L 24°
		R 0°-50°	R 0°	R 21°
REAR HEADER	RH	L 0°-50°	L 0°	L 50°
		R 0°-50°	R 0°	R 50°
A-PILLAR	AP1	L -5°-50°	L -5°	L 26°
		R -5°-50°	R -5°	R 26°

		VERTICAL ANGLE SPECIFIED RANGE	MINIMUM VERTICAL ANGLE	MAXIMUM VERTICAL ANGLE
	AP2	L -5°-50°	L -5°	L 49°
		R -5°-50°	R -5°	R 49°
	AP3	L -5°-50°	L -5°	L 44°
		R -5°-50°	R -5°	R 44°
B-PILLAR	BP1	L -10°-50°	L -10°	L 20°
		R -10°-50°	R -10°	R 20°
	BP2*	L 0°-50°	L 0°	L 4°
		R 0°-50°	R 0°	R 4°
	BP3	L -10°-50°	L -10°	L -8°
		R -10°-50°	R -10°	R -8°
	BP4	L -10°-50°	L -10°	L -8°
		R -10°-50°	R -10°	R -8°
OTHER PILLAR	OP1*	L 0°-50°	L 0°	L 6°
		R 0°-50°	R 0°	R 6°
	OP2*	L 0°-50°	L 0°	L 4°
		R 0°-50°	R 0°	R 3°
REAR PILLAR	RP1	L -10°-50°	L -10°	L 15°
		R -10°-50°	R -10°	R 15°
UPPER ROOF 1		0°-50°	0°	50°
UPPER ROOF 2		0°-50°	0°	34°
UPPER ROOF 3		0°-50°	0°	38°
UPPER ROOF 4		0°-50°	0°	50°
UPPER ROOF 5		0°-50°	0°	35°
UPPER ROOF 6		0°-50°	0°	34°

As determined using the Procedures specified in S8.13.4.2. BP2\*, OP1\*, and OP2\* are seat belt anchor points. Please note that OP2 was re-located onto the anchorage during targeting.

RECORDED BY: David G. Gotwals

DATE: December 10, 2002

APPROVED BY: Helen A. Kaleta

TABLE 2-5  
TARGET MEASUREMENTS

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Pontiac Vibe 4-Door SUV

VEH. NHTSA NO.: C30105 VIN: 5Y2SL62833Z440235 COLOR: Red

VEH. BUILD DATE: September, 2002 TEST DATE: December 10-11, 2002

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Michael Smith, David Gotwals

Measurement	Description	Left Side	Right Side
M	Seat Fore/Aft Travel (Front seats)	239 mm	239 mm
T°	Horizontal ∠ (CG-F1 (Left Seat) to (Right A-Pillar))	111.7°	—
A1°	360° - T°	248.3°	—
W°	Horizontal ∠ (CG-2 (Left Seat) to (Left A-Pillar))	200.5°	—
A2°	A2° = W°	200.5°	—
U°	Horizontal ∠ (CG-2 (Left Seat) to (Left B-Pillar))	276.2°	—
B1°	B1° = U°	276.2°	—
V°	Horizontal ∠ (CG-R (Left Seat) to (Left B-Pillar))	196.9°	—
B2°	B2° = V°	196.9°	—
W° (right)	Horizontal ∠ (CG-F2 (Right Seat) to (Right A-Pillar))	—	159.3°
A1° (right)	A1° (right) = W° (right)	—	159.3°
T° (right)	Horizontal ∠ (CG-F1 (Right Seat) to (Left A-Pillar))	—	248.3°
A2° (right)	360° - T° (right)	—	111.7°
V° (right)	Horizontal ∠ (CG-R (Right Seat) to (Right B-Pillar))	—	161.0°
B1° (right)	B1° (right) = V° (right)	—	161.0°
U° (right)	Horizontal ∠ (CG-F2 (Right Seat) to (Right B-Pillar))	—	83.4°
B2° (right)	B2° (right) = U° (right)	—	83.4°
J	A-Pillar ((Plane 3) - (Plane 5))	362.6 mm	362.8 mm
J/2	J ÷ 2	181.3 mm	181.4 mm
D1	Upper Roof ((Plane A) - (Plane B))	1826.0 mm	
D1/2	D1 ÷ 2	912.5 mm	
D2	Upper Roof ((Plane C) - (Plane D))	1128.7 mm	

Measurement	Description	Left Side	Right Side
D2/2	D2 + 2	584.4 mm	
.35D1	.35 x D1	638.8 mm	
.35D2	.35 x D2	395.0 mm	
N	B-Pillar ((BPR) - (lowest point on daylight opening forward of B-Pillar))	450.3 mm	448.8 mm
N/2	B-Pillar ((BP3) - (lowest point on daylight opening forward of B-Pillar))	225.2 mm	224.4 mm
N/4	B-Pillar ((BP4) - (lowest point on daylight opening forward of B-Pillar))	112.6 mm	112.2 mm
D	((Corner of Roof Area, point 7) - (roof area center, point M))	755.0 mm	755.0 mm
3D/7	(3 x D) + 7	323.6 mm	323.6 mm
Q	O-Pillar ((OPR) - (lowest point on daylight opening))	401.5 mm	402.7 mm
Q/2	Q + 2	200.8 mm	201.4 mm

As determined using the Procedures specified in S10.1-10.13.

SgRP Locations (vehicle coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	2326.2	-352.5	1352.3	2326.2	352.5	1352.3
Rear Row	3101.8	-345.0	1362.8	3101.8	345.0	1362.8



SgRP Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
Front	2825.6	-352.6	853.6	2826.0	353.0	852.2
Rear Row	3601.8	-346.6	865.6	3602.2	343.9	864.3

CG Locations (world coordinates)						
	Left (mm)			Right (mm)		
	x	y	z	x	y	z
CGF1	2746.6	-352.6	1513.6	2747.0	353.0	1512.2
CGF2	2985.6	-352.6	1513.6	2986.0	353.0	1512.2
CGR	3761.8	-346.6	1525.6	3762.2	343.9	1524.3

REFERENCE FOR VEHICLE COORDINATE SYSTEM:

Driver door striker attachment, upper hold (x, y, z) = (2437.6, 1578.6, 753.3)

REMARKS:

RECORDED BY: Dayid G. Gotwals

DATE: December 10, 2002

APPROVED BY: Helen A. Kaleto

**TABLE 2-6**  
**SUMMARY OF TARGETING RESULTS**

VEH. MOD YR/MAKE/MODEL/BODY: 2003 Pontiac Vibe 4-Door SUV

VEH. NHTSA NO.: G30105 VIN: 5Y2SL62833Z440235 COLOR: Red

VEH. BUILD DATE: September, 2002 TEST DATE: December 10-11, 2002

TEST LABORATORY: MGA Research Corporation

OBSERVERS: Michael Smith, David Gotwals

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
A-Pillar Left Side								
AP1	2017.3	-508.6	2163.2			Yes		
REL	2032.6	-516.7	2120.7	228	26		2	No
AP2	1996.4	-554.2	2075.5	201	49	No		Yes
AP3	1818.3	-597.6	1981.9	201	44	No		No
A-Pillar Right Side								
AP1	2018.3	507.0	2159.3			Yes		
REL	2042.3	523.7	2114.1	132	26		2	Yes
AP2	1987.9	555.3	2070.4	159	49	No		No
AP3	1811.8	591.6	1977.5	159	44	No		Yes
B-Pillar Left Side								
BP1	2552.3	-459.4	2213.5			Yes		
REL	2553.2	-413.0	2211.8	270	20		2	No
BP2	2527.6	-584.8	1956.1	270	4	No		No
BP3	2504.6	-585.8	1989.3			Yes		
REL	2495.9	-581.6	2012.4	278	-8		1	No
BP4	2564.5	-634.7	1877.4	225	-8	No		No
B-Pillar Right Side								
BP1	2559.6	481.3	2210.5			Yes		
REL	2564.9	412.2	2209.7	90	20		2	Yes



## SUMMARY OF TARGETING RESULTS

Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
BP2	2533.3	569.7	1955.9	90	4	No		Yes
BP3	2509.8	597.1	1986.2			Yes		
REL	2500.4	569.2	2008.9	84	-8		1	No
BP4	2569.3	635.7	1873.4	45	-8	No		No
Other Pillar Left Side								
OPR	3268.5	-448.4	2227.6					
OP1	3348.0	-579.4	2003.5	270	6	No		No
OP2	3343.3	-582.1	2027.7			Yes		
REL	3345.5	-578.1	2007.5	270	4			No
Other Pillar Right Side								
OPR	3272.9	448.3	2225.9					
OP1	3341.3	574.9	2002.0	90	6	No		Yes
OP2	3343.8	588.7	2026.3			Yes		
REL	3344.8	572.8	2009.4	90	3		1	No
Rear Pillar Left Side								
RP1	3571.3	-472.2	2166.7	280	15	No		No
RP2*	3704.7	-640.4	2016.2					
Rear Pillar Right Side								
RP1	3571.1	473.2	2165.7	80	15	No		No
RP2*	3700.5	642.1	2016.4					
Front Header Left Side								
FH1	1962.0	-388.4	2189.1	180	50	No		No
FH2	1963.2	-236.3	2175.1	180	50	No		No
Front Header Right Side								
FH1	1962.8	384.9	2167.5	180	50	No		No
FH2	1954.4	236.8	2175.4	180	50	No		No
Side Rail Left Side								
SR1	2181.8	-494.6	2200.9			Yes		
REL	2162.7	-512.9	2149.3	270	31		2	Yes
SR2(A)	2311.2	-489.0	2222.8			Yes		

SUMMARY OF TARGETING RESULTS								
Target	Location (mm)			Horizontal Angle (deg)	Vertical Angle (deg)	Relocation (Yes/No)	Extension (# of 25 mm Spheres)	Impact (Yes/No)
	x	y	z					
REL	2310.9	-506.8	2172.7	270	33		2	Yes
SR2(B)	2252.1	-489.8	2217.2			Yes		
REL	2255.1	-509.0	2167.6	270	29		2	No
SR3A	2929.0	-463.7	2185.5	270	50	No		No
SR3B	3064.2	-464.9	2176.2	270	50	No		No
SR3C	3419.4	-482.4	2180.5	270	24	No		No
Side Rail Right Side								
SR1	2184.6	497.3	2197.7			Yes		
REL	2180.4	516.2	2149.1	90	31		2	No
SR2(A)	2314.4	491.3	2219.4			Yes		
REL	2327.6	460.1	2178.0	90	42		2	No
SR2(B)	2260.5	493.6	2214.3			Yes		
REL	2260.0	456.6	2169.1	90	50		2	No
SR3A	2934.7	459.9	2181.9	90	50	No		No
SR3B	3067.1	465.1	2172.6	90	50	No		No
SR3C	3423.3	481.6	2180.6	90	21	No		No
Rear Header Left Side								
RH	3685.8	-346.7	2189.2	0	50	No		No
Rear Header Right Side								
RH	3697.3	343.1	2187.2	0	50	No		No
Upper Roof								
UR1	2180.7	-391.8	2183.4	270	50	No		No
UR2	2552.2	-394.2	2212.5	270	34	No		Yes
UR3	3447.5	-389.7	2241.1	270	39	No		No
UR4	2180.0	391.0	2180.2	90	50	No		Yes
UR5	2553.3	386.5	2207.9	90	35	No		No
UR6	3271.8	392.8	2255.4	90	34	No		No

As determined using the Procedures specified in S10.1-10.13.

REMARKS: The horizontal and vertical approach angles listed in this table are the impact angles judged by the test engineer most likely to give high HIC(d) values.

\*RP2 was located more than 600 mm rearward of the rearmost seating reference position (SgRP). RP2 (Left and Right) are therefore exempt from testing.

RECORDED BY: David G. Gotwals

DATE: December 10, 2002

APPROVED BY: Helen A. Kaloto

MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/10/02

TEST #2  
(FM2386)

RIGHT API  
HV 132/26

PRE-TEST



MGA RESEARCH CORP  
FMVSS 2010 TESTING  
2003 PONTIAC VIBE

C30105

02/10/02

TEST #2  
(FM2385)

RIGHT API  
H/V - 132/26

POST-TEST

MGA RESEARCH CORP  
FMYSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/10/02

TEST #2  
(FM12386)

RIGHT AP1  
H/V = 132/26

POST-TEST

MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME#2.3

DOC. NO.: MGATP201U\_FRAME#2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105

VEHICLE YR/MAKE/MODEL: 2003 Pontiac Vibe

#### GENERAL TEST PARAMETERS:

Test Number: 2

Target (Vehicle Side): Left Right API

Temperature: 73 °F

MGA Test Reference No.: FM2386

Humidity: 22 %

Approach Angles: Horizontal 132 °

Time of Test: 1:40 am pm

Vertical 21 °

FMH Serial No: 36

#### TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left <u>Right</u> Pt. O
<u>612</u>	<u>591</u>	<u>6.5</u>	<u>23.9</u>	<u>14</u>	<u>22</u>

INSTRUMENTAION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35923</u>	<u>-100.9</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35916</u>	<u>100.7</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J35918</u>	<u>100.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature]

Approved By\*: [Signature]

Date: 12/14/02

\* Only necessary for NHTSA (Government) Compliance testing.

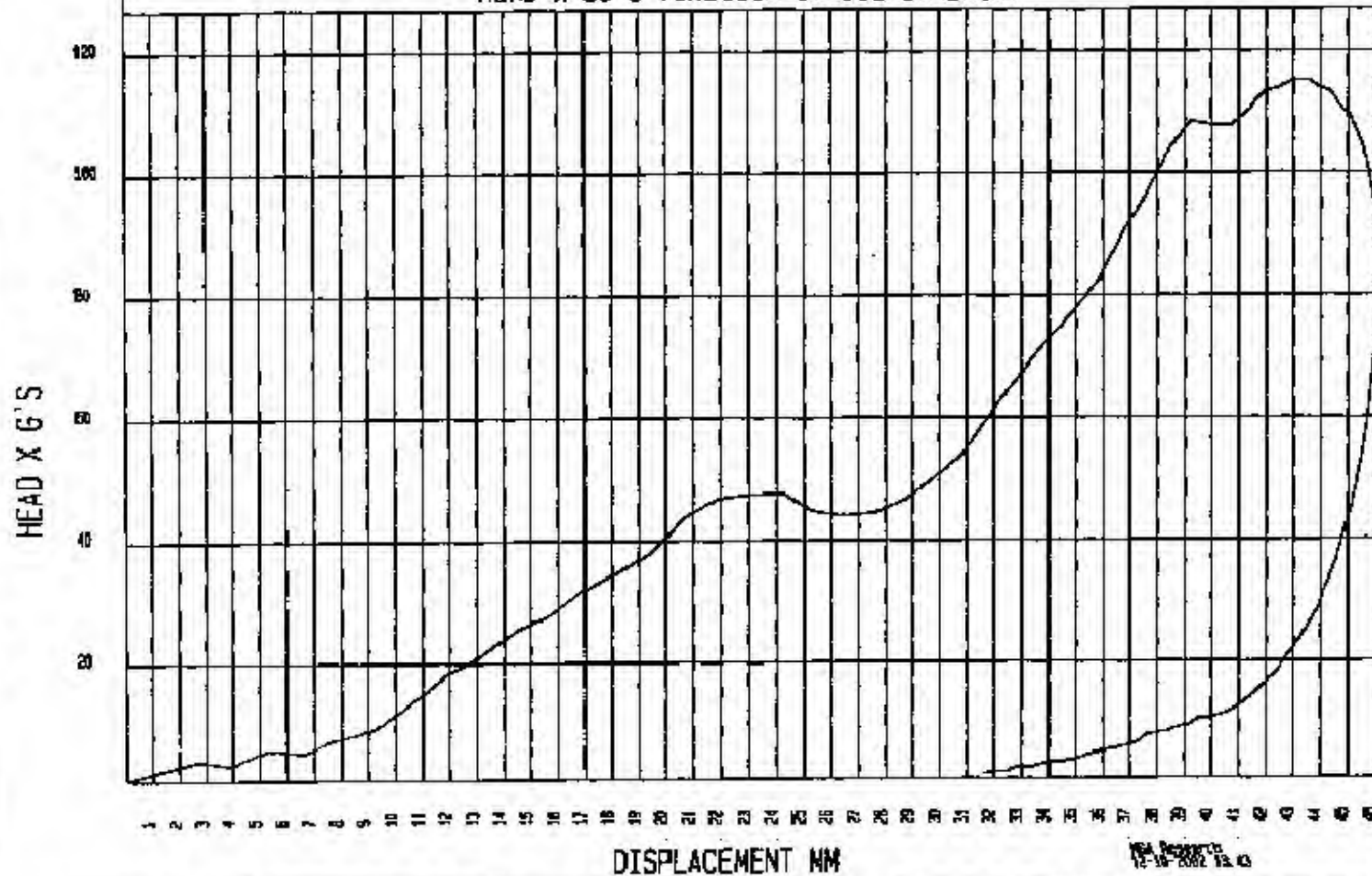
```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\FM2386AV.A05
HIC = 591.17 calculated over 6.5 msec
T1 = 5.08 msec T2 = 11.55 msec
*****
HIC(d) = 612
Impact Velocity = 23.9 (kph)
```

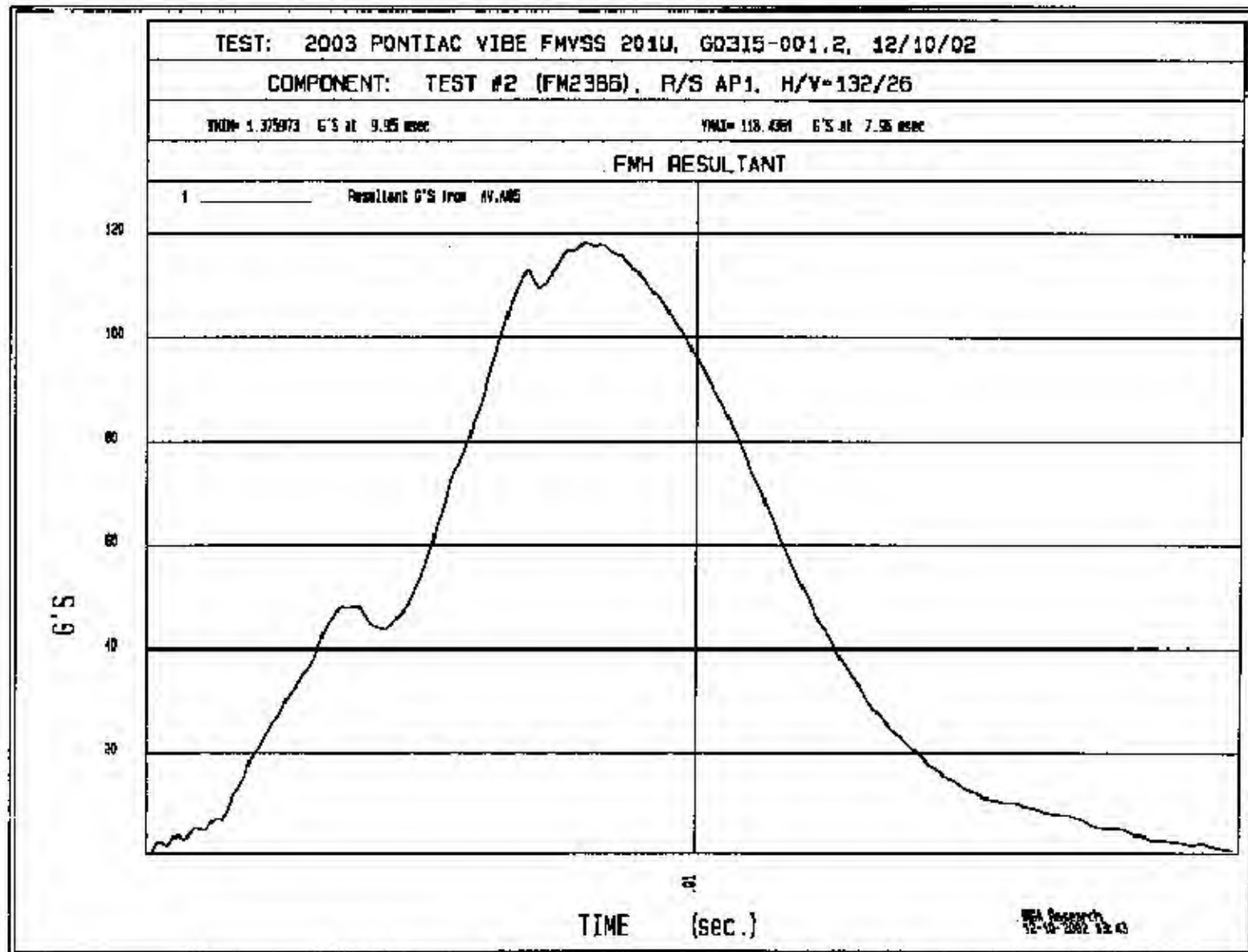


TEST: 2003 PONTIAC VIBE FMVSS 2010, 60315-001.2, 12/10/02

COMPONENT: TEST #2 (FM2386), R/S AP1, H/V=132/26

HEAD X as a function of DISPLACEMENT





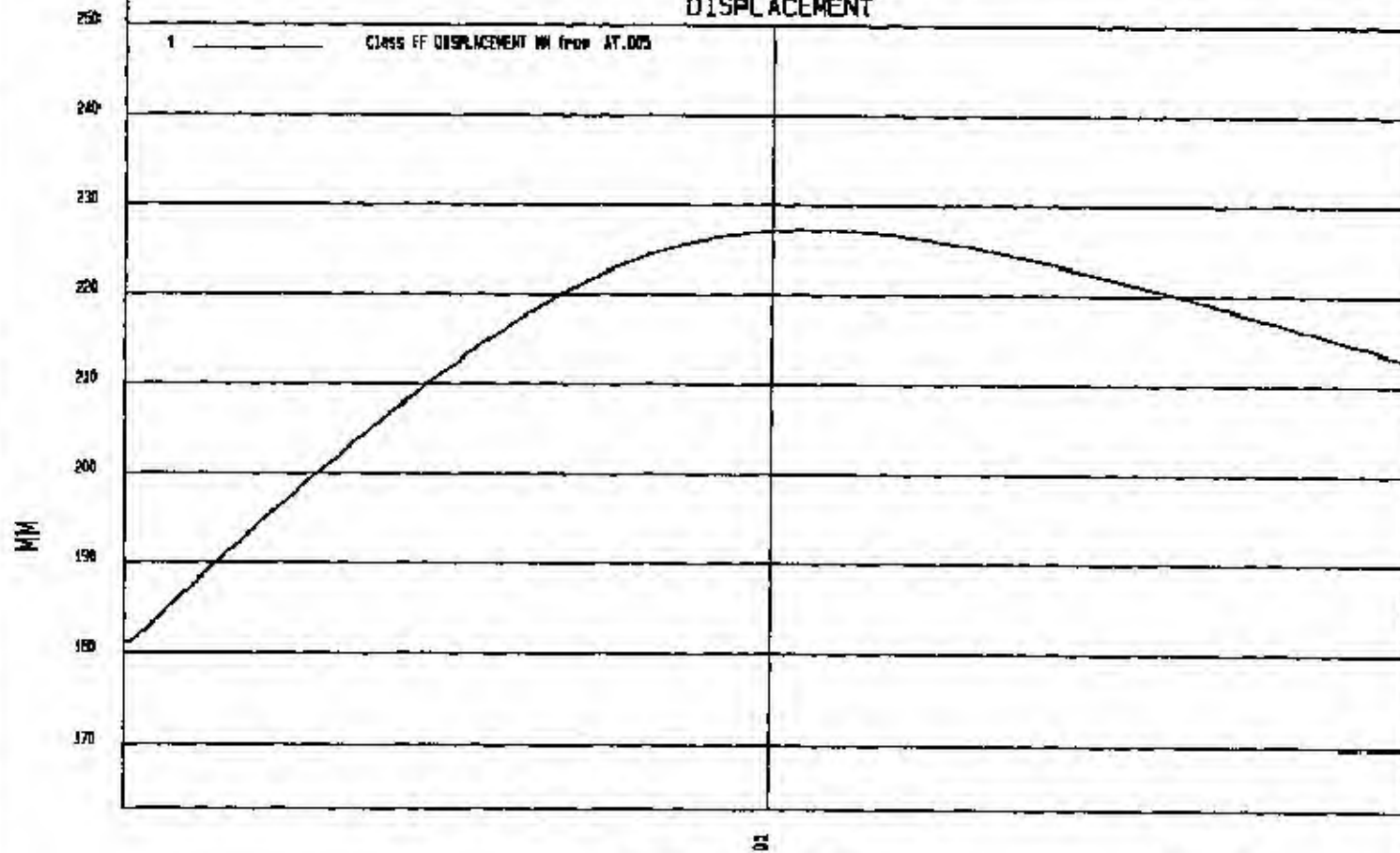
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

COMPONENT: TEST #2 (FM2386), R/S AP1, H/V=132/26

YMIN= 181.2551 MM at .055 msec

YMAX= 227.3397 MM at 10.5 msec

### DISPLACEMENT



TIME SECONDS

MSA 10/10/02  
12-10-2002 11:43

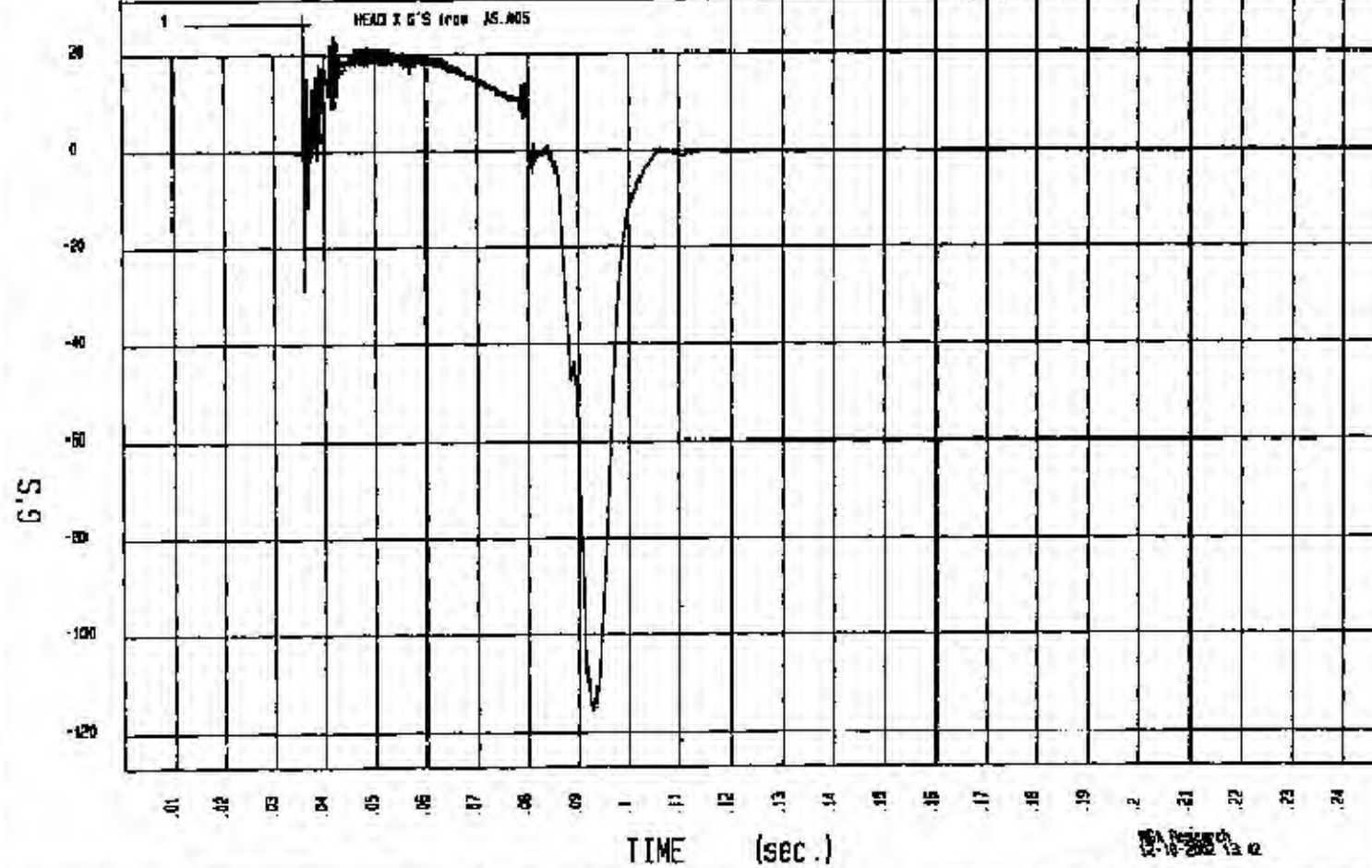
TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/10/02

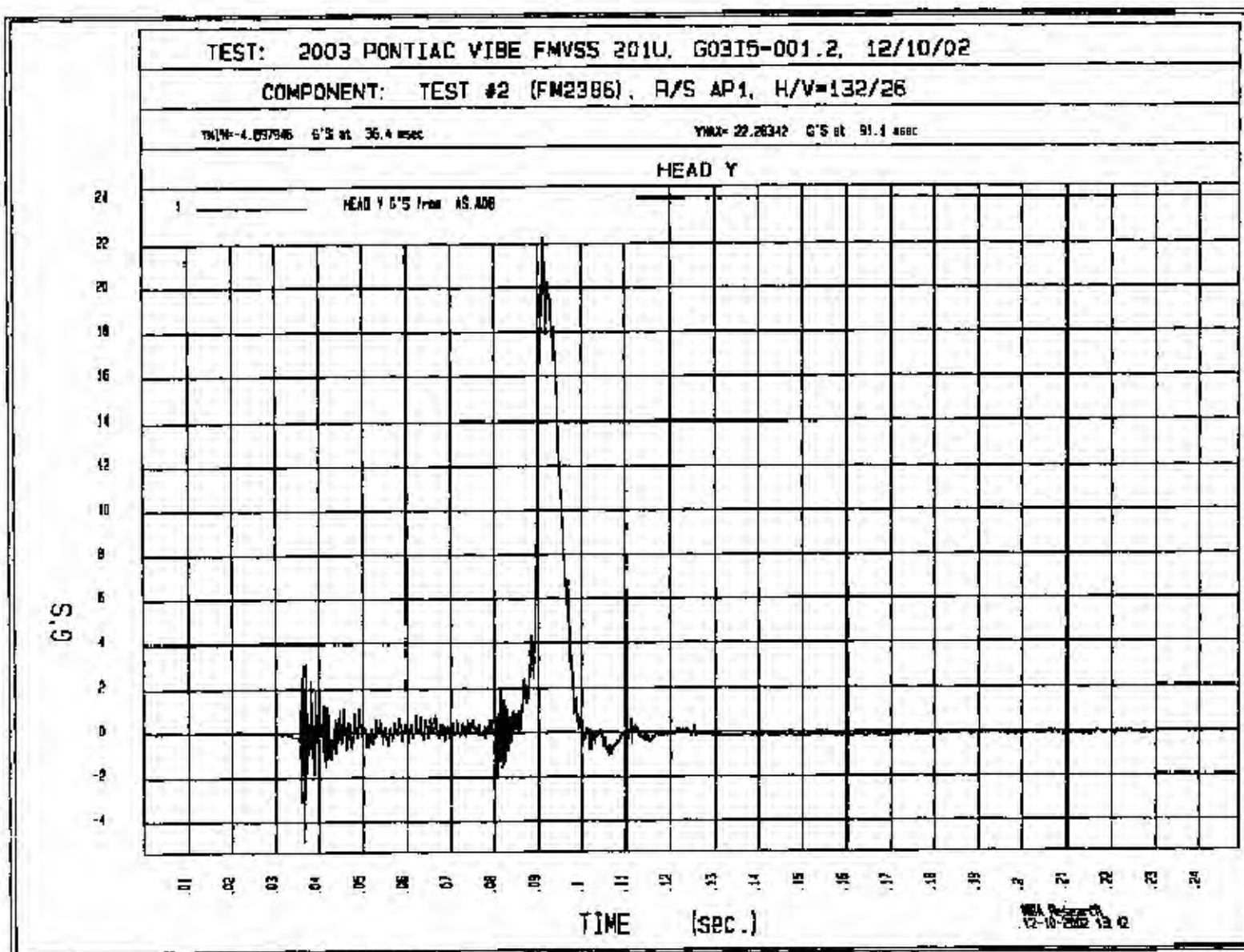
COMPONENT: TEST #2 (FM2386), R/S AP1, H/V=132/26

WOM=-115.3113 G'S at 92.6 msec

YMAX= 28.18975 G'S at 26.6 msec

HEAD X





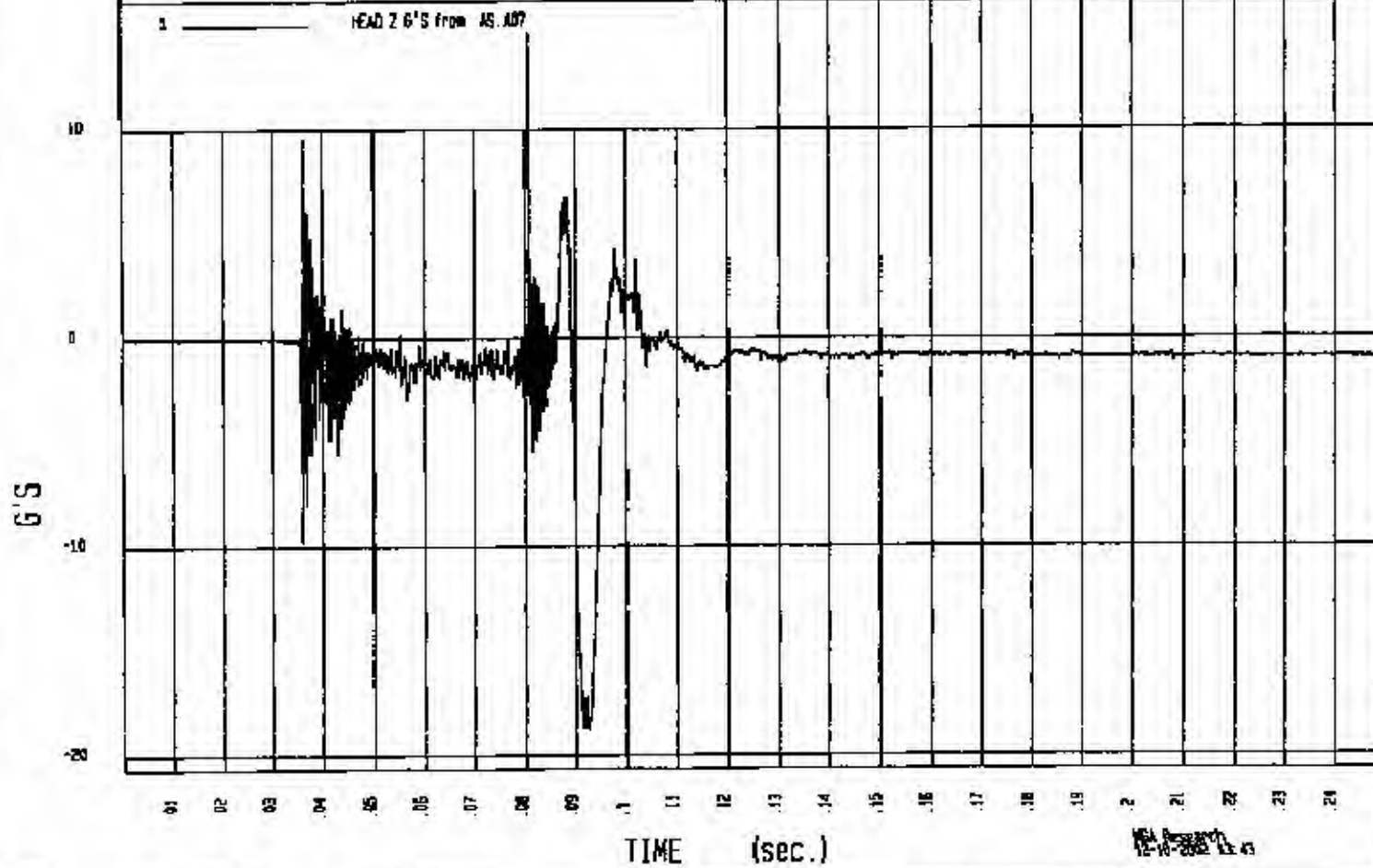
TEST: 2003 PONTIAC VIBE FMVSS 201U, G03I5-001.2, 12/10/02

COMPONENT: TEST #2 (FM2386), R/S AP1, H/V=132/26

YMIN=-18.81545 G'S at 92.1 msec

YMAX=14.8645 G'S at 80.5 msec

HEAD Z



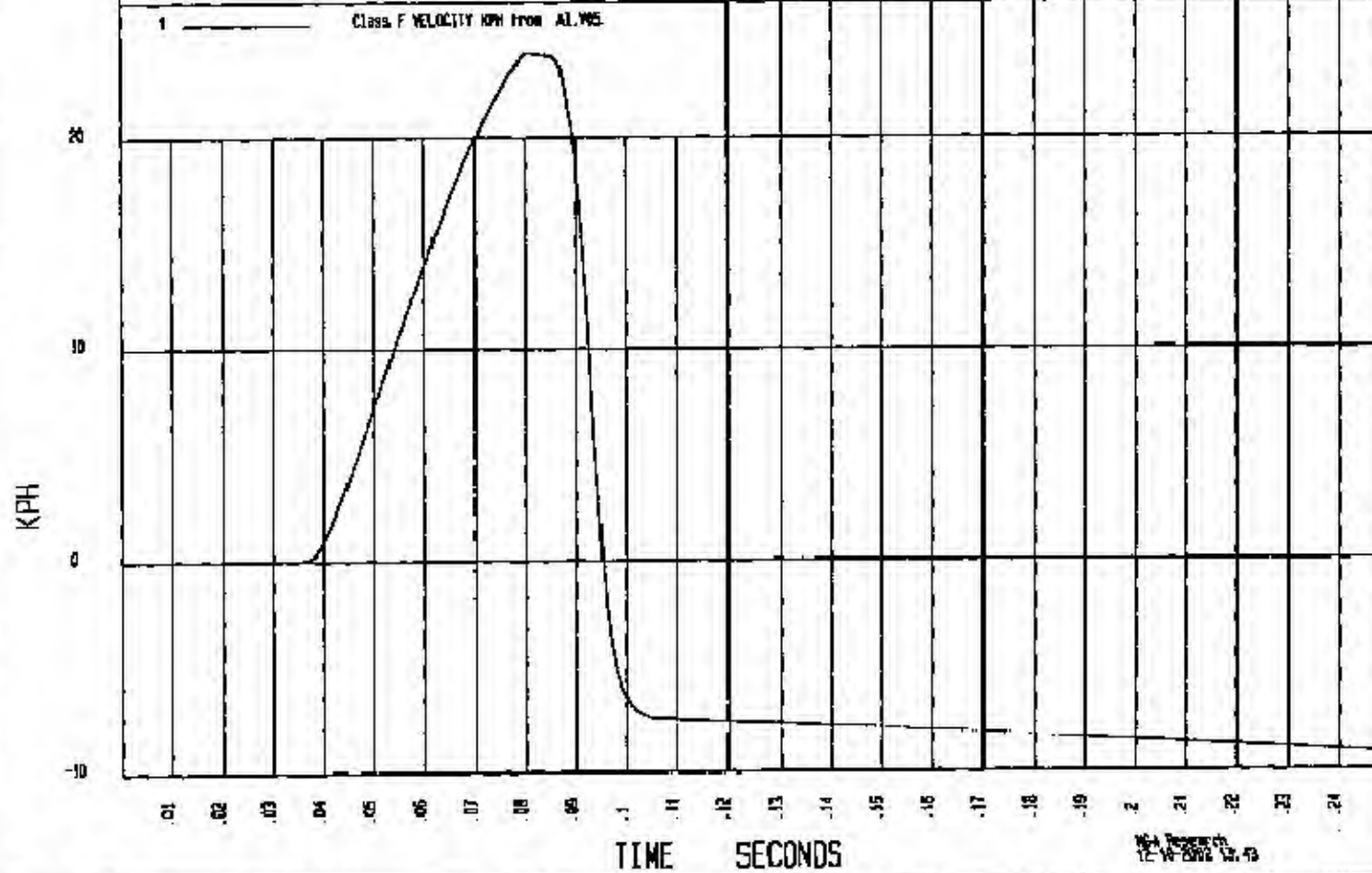
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-D01.2, 12/10/02

COMPONENT: TEST #2 (FM2386), R/S AP1, H/V=132/26

YMIN=-9.123896 KPH at 249 msec

YMAX=24.0125 KPH at 80.4 msec

VELOCITY





SECA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C00105

12/11/02

TEST #7  
(FMVSS 201)

TEST APT  
R/V = 201/40

PRE-TEST



MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #7  
(FM2391)

LEFT AP2  
H/V = 201/49

POST-TEST

**MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE**

**C30105**

**12/11/02**

**TEST #7  
(FM2391)**

**LEFT AP2  
H/V = 201/49**

**POST-TEST**

MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME#2.3

DOC. NO.: MGATP201U\_FRAME #2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC VULVE

#### GENERAL TEST PARAMETERS:

Test Number: 7

Target (Vehicle Side) Left Right AP2

Temperature: 73 °C

MGA Test Reference No.: FM2351

Humidity: 22 %

Approach Angles: Horizontal 201 °

Time of Test: 11:03 am/pm

Vertical 49 °

FMH Serial No: 35

#### TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
389	295	13.5	23.7	7	10

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35524	-93.1	1.21	1.21
Y	6	J35519	95.3	1.23	1.23
Z	7	J31051	95.1	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

THE TEST STOPPED AT 11:03 AM DURING THE TEST.

Recorded By: [Signature] Approved By: [Signature] Date: 12/11/02

\*Only necessary for NHTSA (Government) Compliance testing.

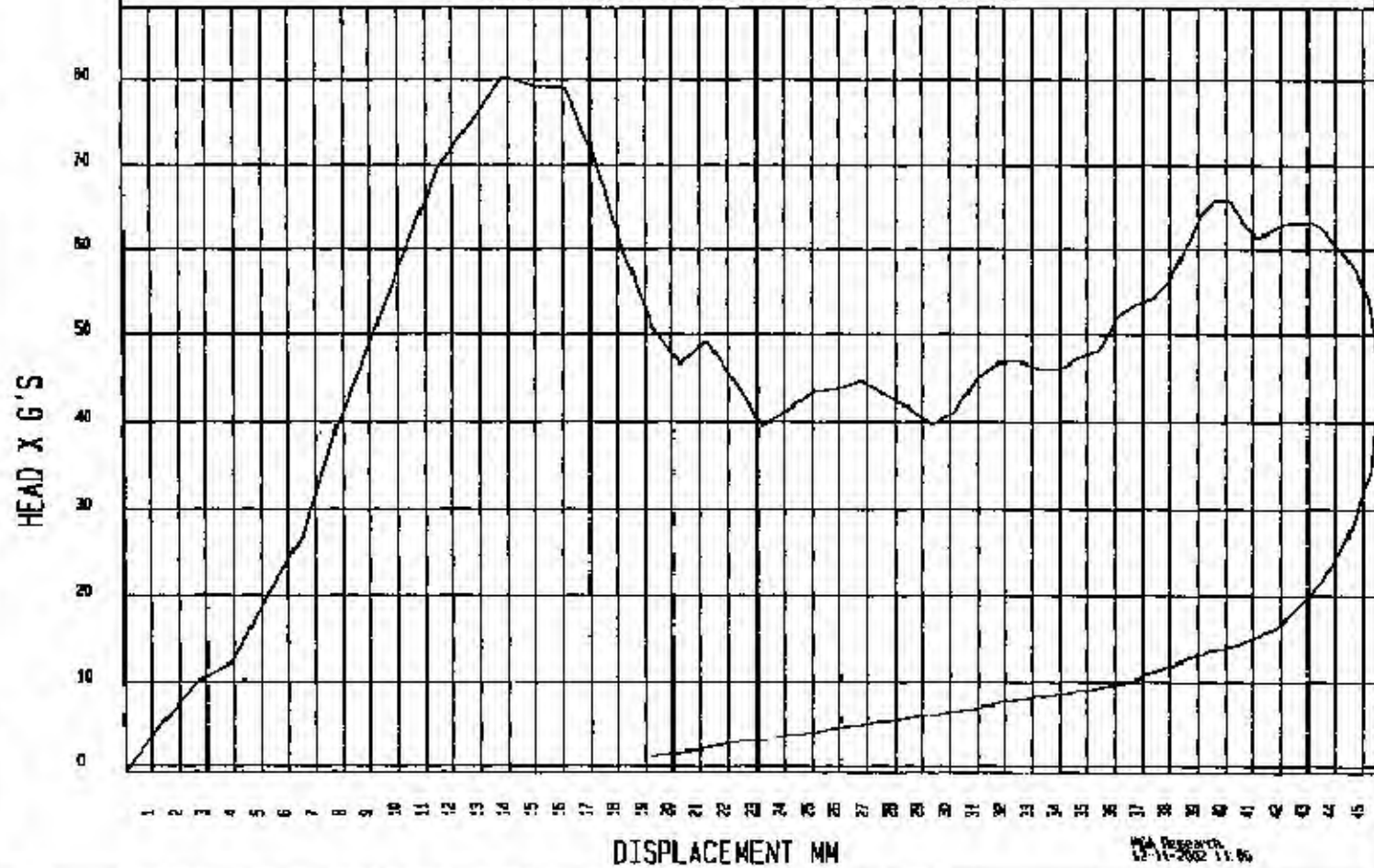
```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\FM2391AV.A05
HIC = 295.30 calculated over 13.5 msec
T1 = 1.10 msec T2 = 14.64 msec
*****
HIC(d) = 389
Impact Velocity = 23.7 (kph)
```



TEST: 2003 PONTIAC VIBE FMVSS 201U, G0315-001.2, 12/11/02

COMPONENT: TEST #7 (FM2391), L/S AP2, H/V=201/49

HEAD X as a function of DISPLACEMENT



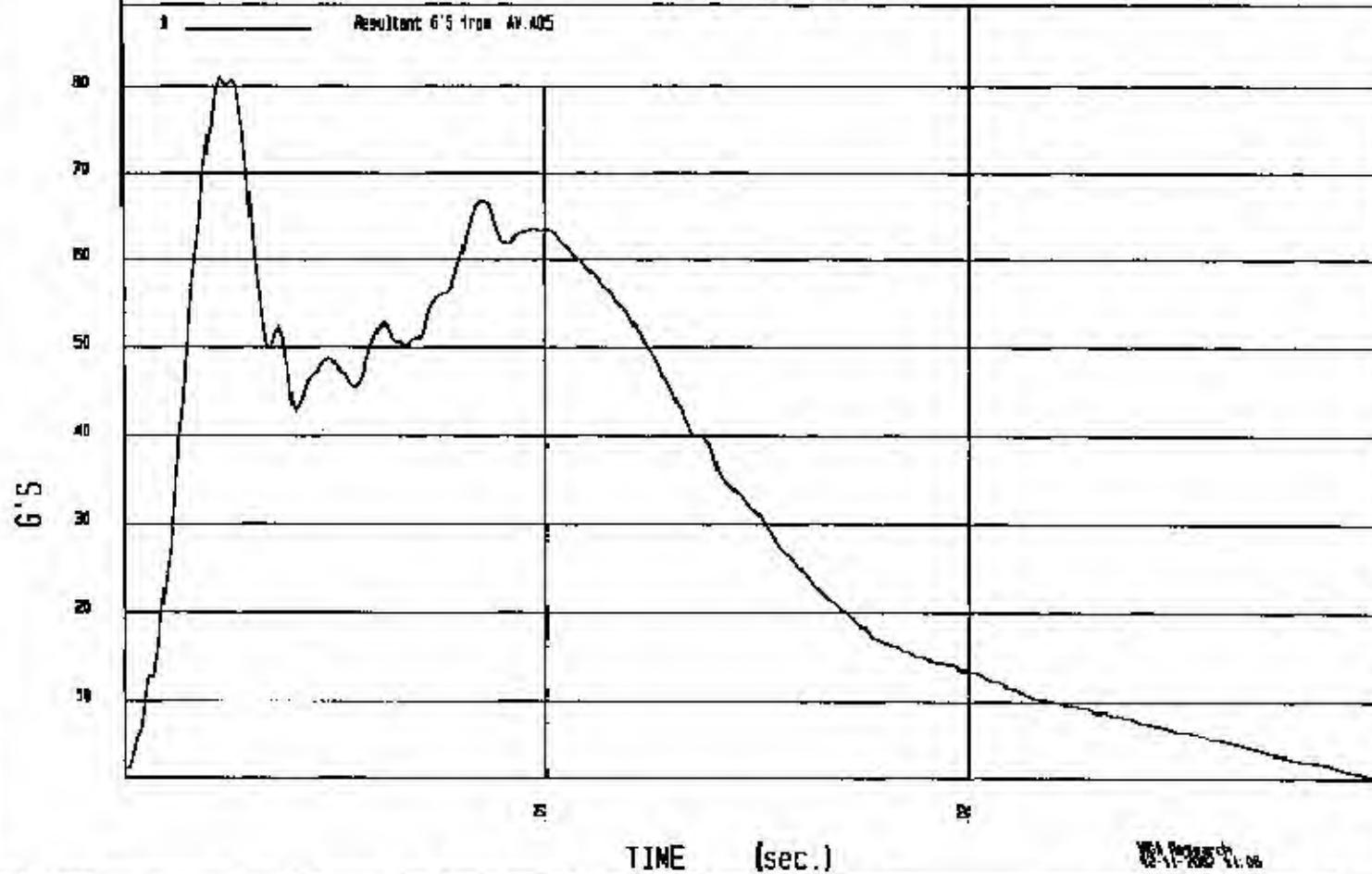
TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/11/02

COMPONENT: TEST #7 (FM2391), L/S AP2, H/Y=201/49

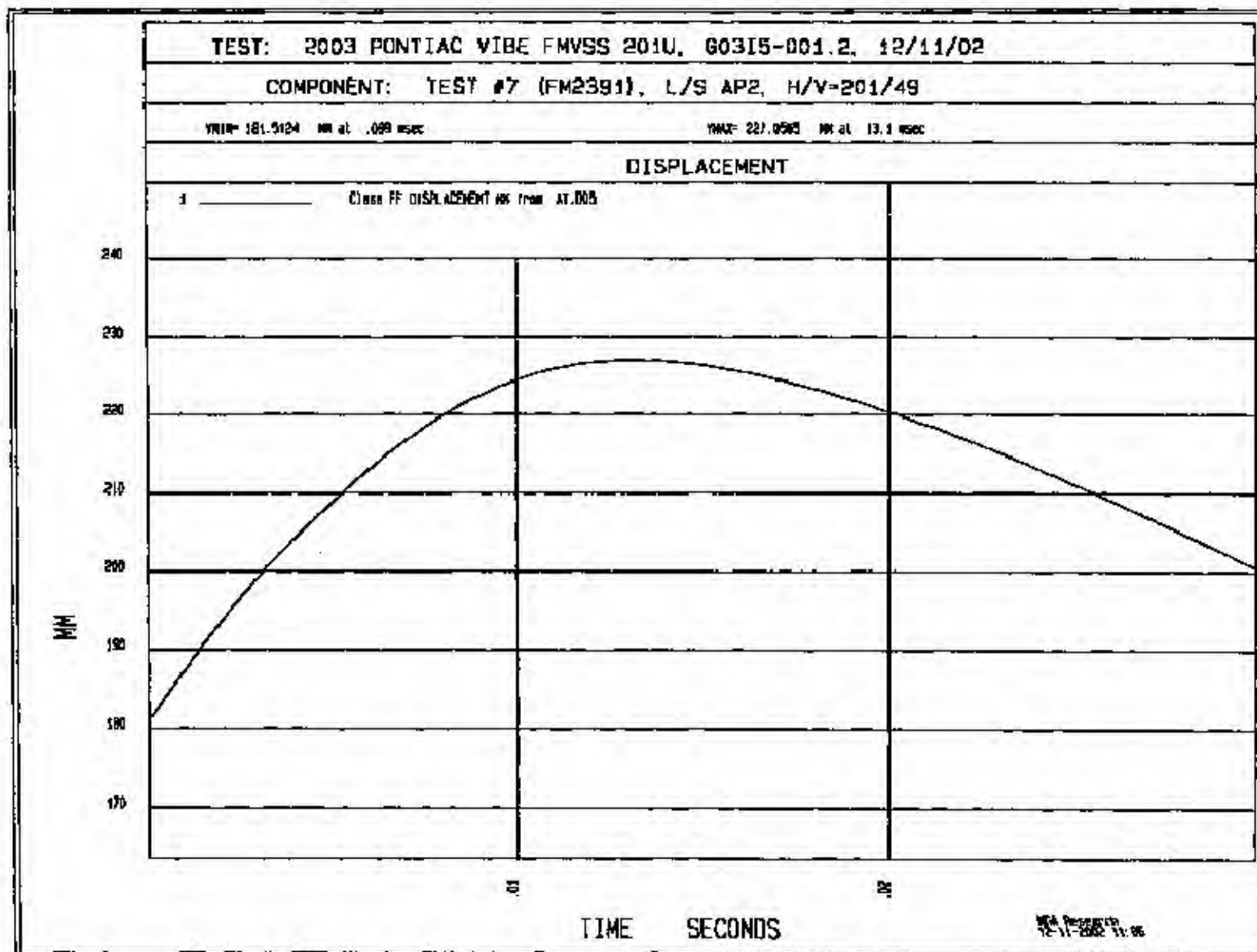
YMIN= 1.254323 G'S at 29.8 msec

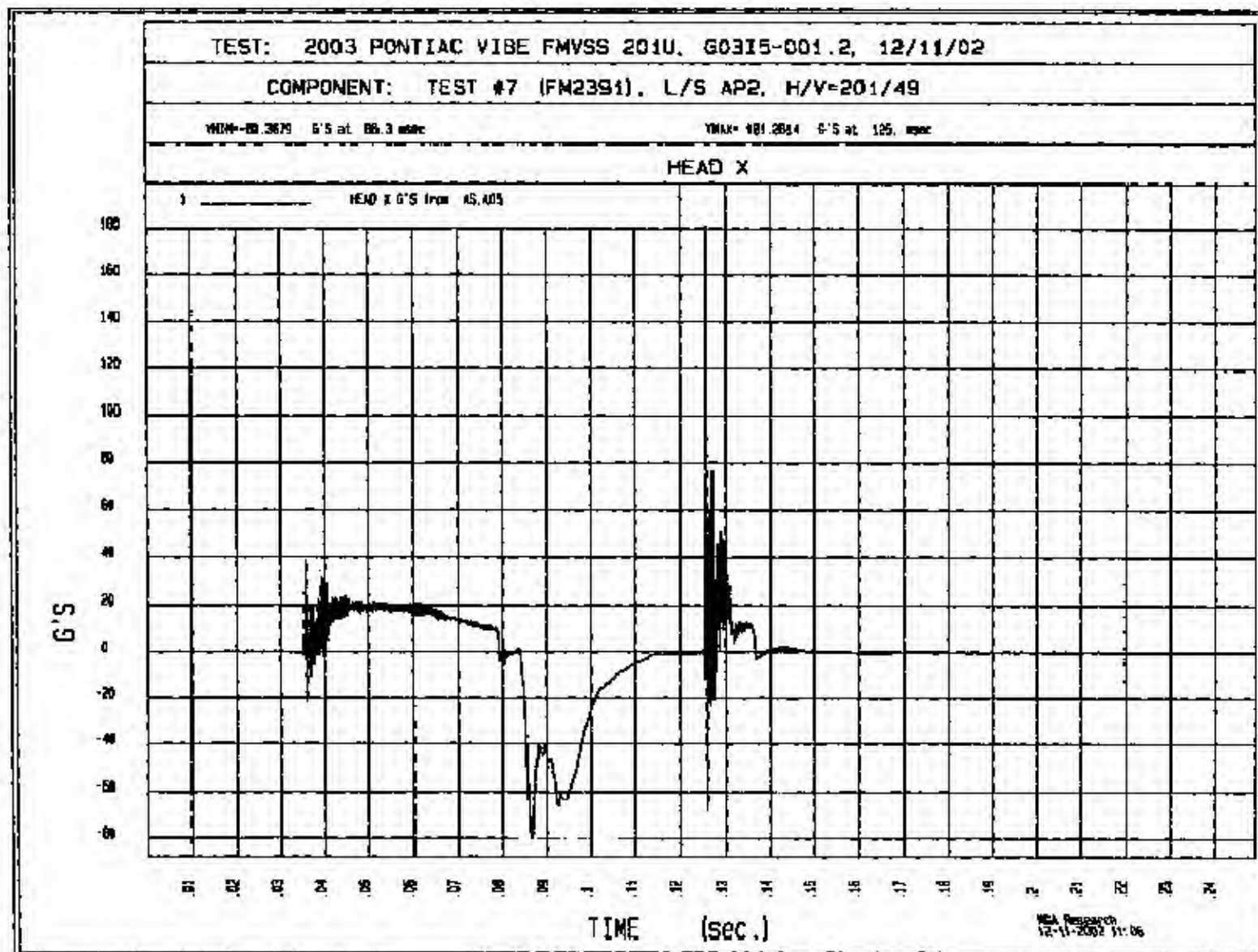
YMAX= 81.15472 G'S at 2.25 msec

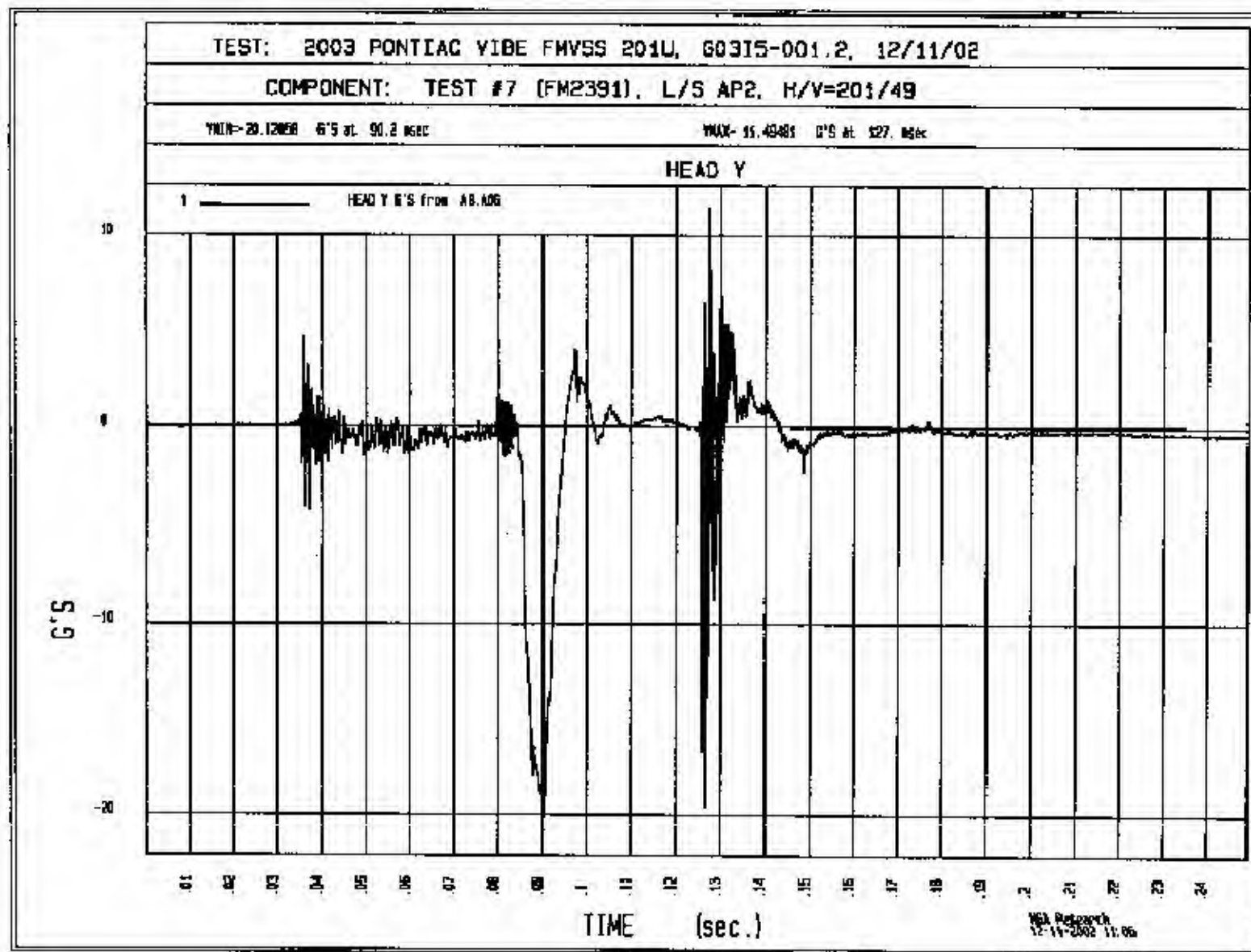
FMH RESULTANT

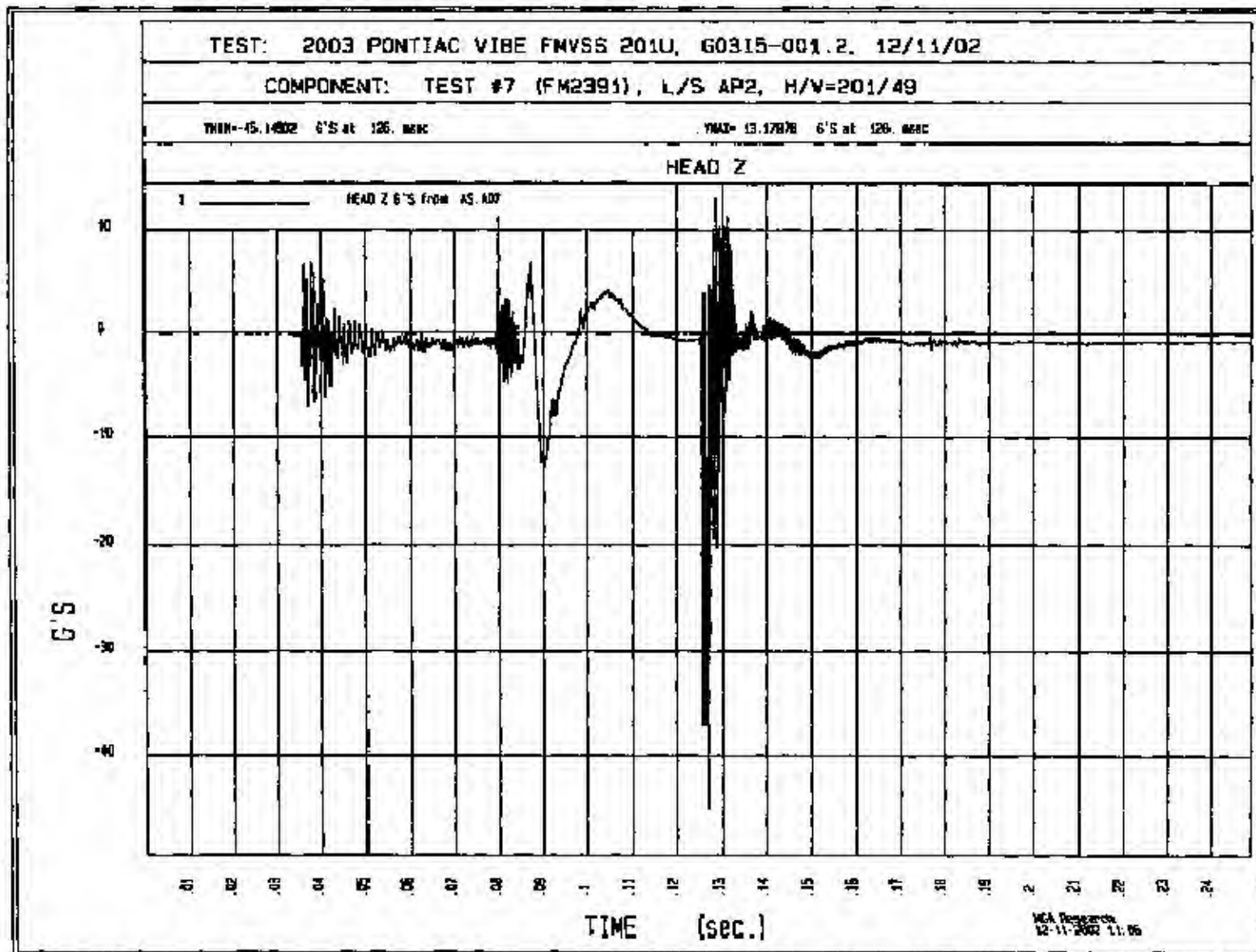












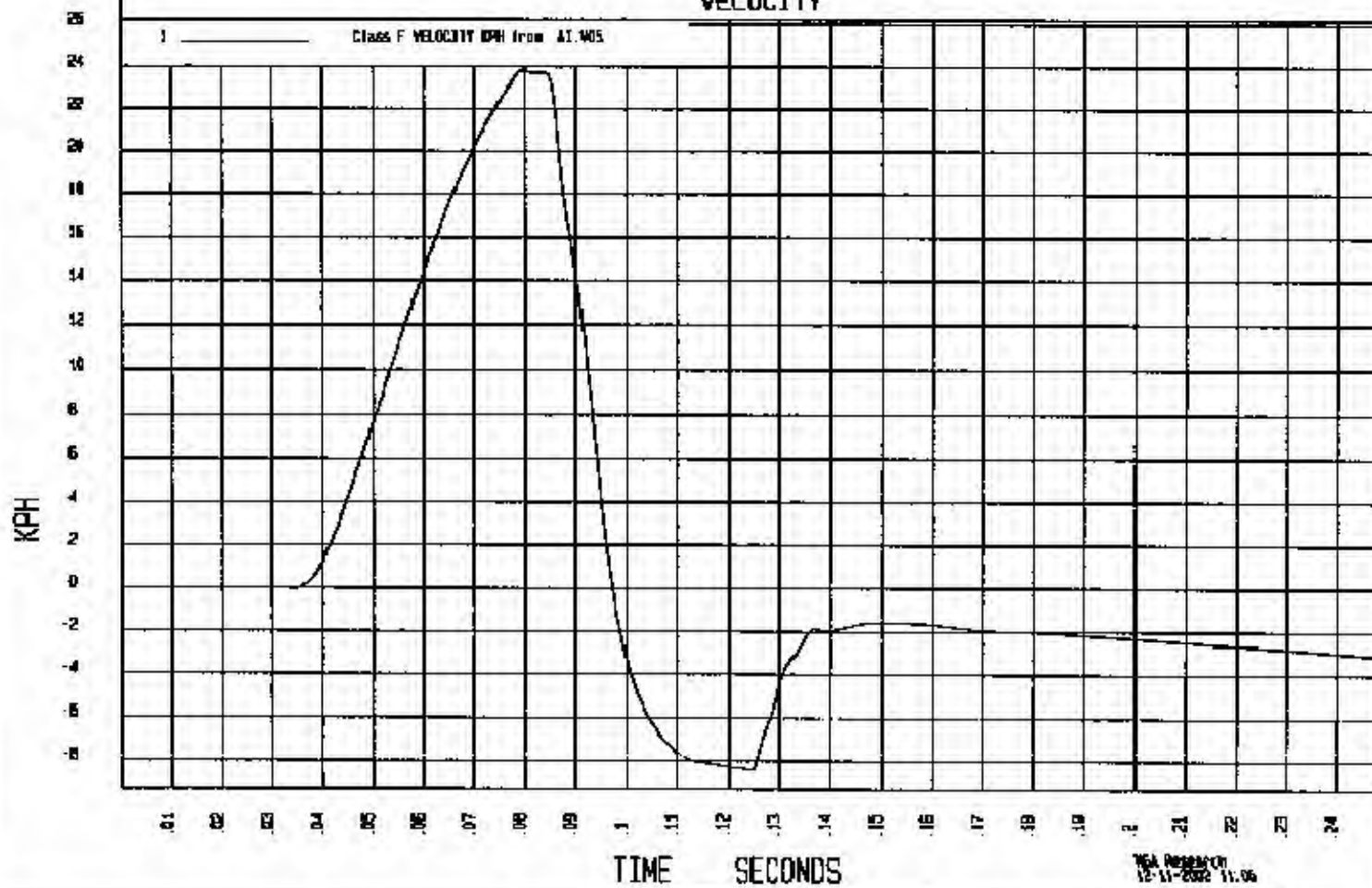
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/11/02

COMPONENT: TEST #7 (FM2391), L/S AP2, H/V-201/49

TMJN=0.440395 KPH at 124. msec

TMJX=23.82304 KPH at 79.4 msec

### VELOCITY





MCA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/10/02

TEST #1  
(FM2385)

RIGHT AP3  
REV 159/44

PRE-TEST



MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/18/02

TEST #1  
(FM2385)

RIGHT AP3  
H/V - 159/44

POST-TEST

MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/10/02

TEST #1  
(FM2385)

RIGHT AP3  
H/V = 159/44

POST-TEST

MICHIGAN OPERATIONS  
DATE: 10/11/01  
SUPERCEDES: MGATP201U\_FRAME#2.3

DOC. NO.: MGATP201U\_FRAME#2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC VIBE

#### GENERAL TEST PARAMETERS:

Test Number: 21

Target (Vehicle Side): left right AP3

Temperature: 73 °C

MGA Test Reference No.: FM2305

Humidity: 22 %

Approach Angles: Horizontal 155 °

Time of Test: 12:12 am/pm pm

Vertical 44 °

FMH Serial No: 35

#### TEST RESULTS:

HIC(d)	HIC	At (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above PL O	Left/Right Pt. O
<u>468</u>	<u>400</u>	<u>11.5</u>	<u>23.9</u>	<u>5</u>	<u>Y</u>

#### INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J35924</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35919</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J31051</u>	<u>95.1</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

PILLON TRIM POPPED OFF PILLON DURING TEST

Recorded By: [Signature] Approved By: [Signature] Date: 12/10/02

\*Only necessary for NHTSA (Government) Compliance testing.

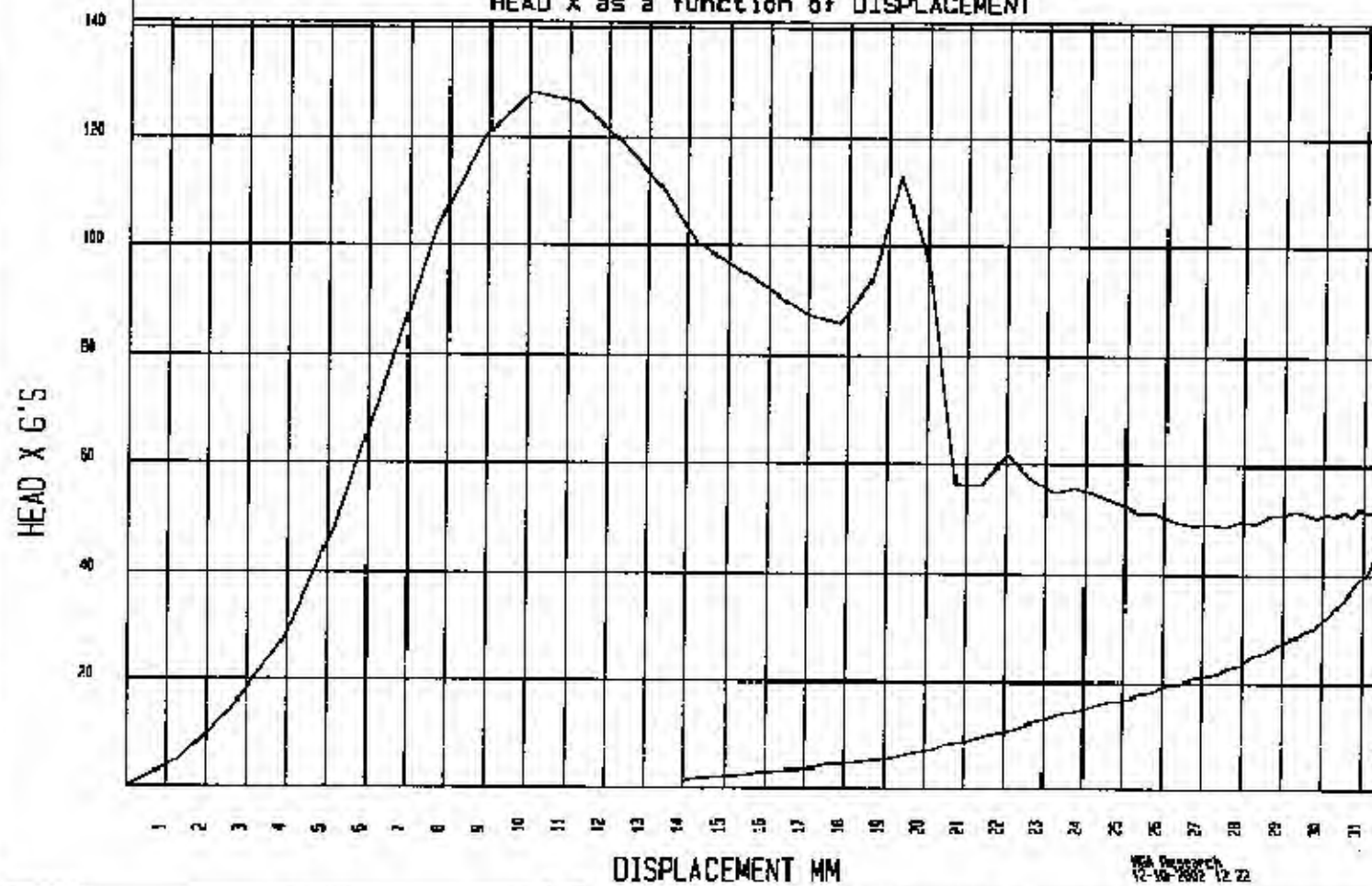
```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\FM2385AV.A05
HIC = 399.54 calculated over 11.5 msec
T1 = .70 msec T2 = 12.15 msec
*****
HIC(d) = 468
Impact Velocity = 23.9 (kph)
```



TEST: 2003 PONTIAC VIBE FMYSS 2010, 603I5-001.2, 12/10/02

COMPONENT: TEST #1 (FM2385), R/S AP3, H/V=159/44

HEAD X as a function of DISPLACEMENT



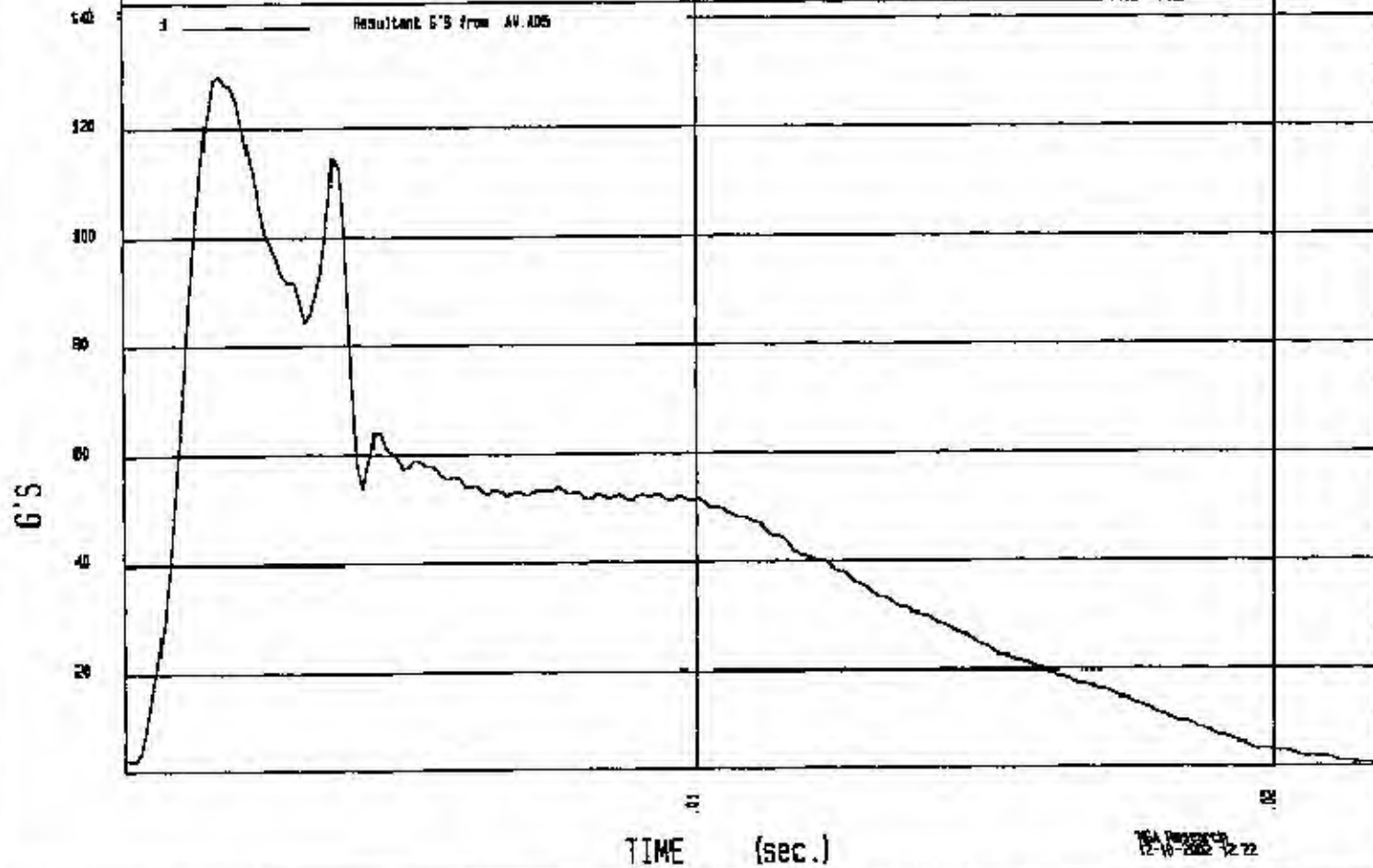
TEST: 2003 PONTIAC VIBE FMVSS 2010, C03I5-001.2, 12/10/02

COMPONENT: TEST #1 (FM2385), R/S AP3, H/V=159/44

YMIN= 2.365489 G'S at 21.9 msec

YMAX= 129.7838 G'S at 1.69 msec

FMH RESULTANT





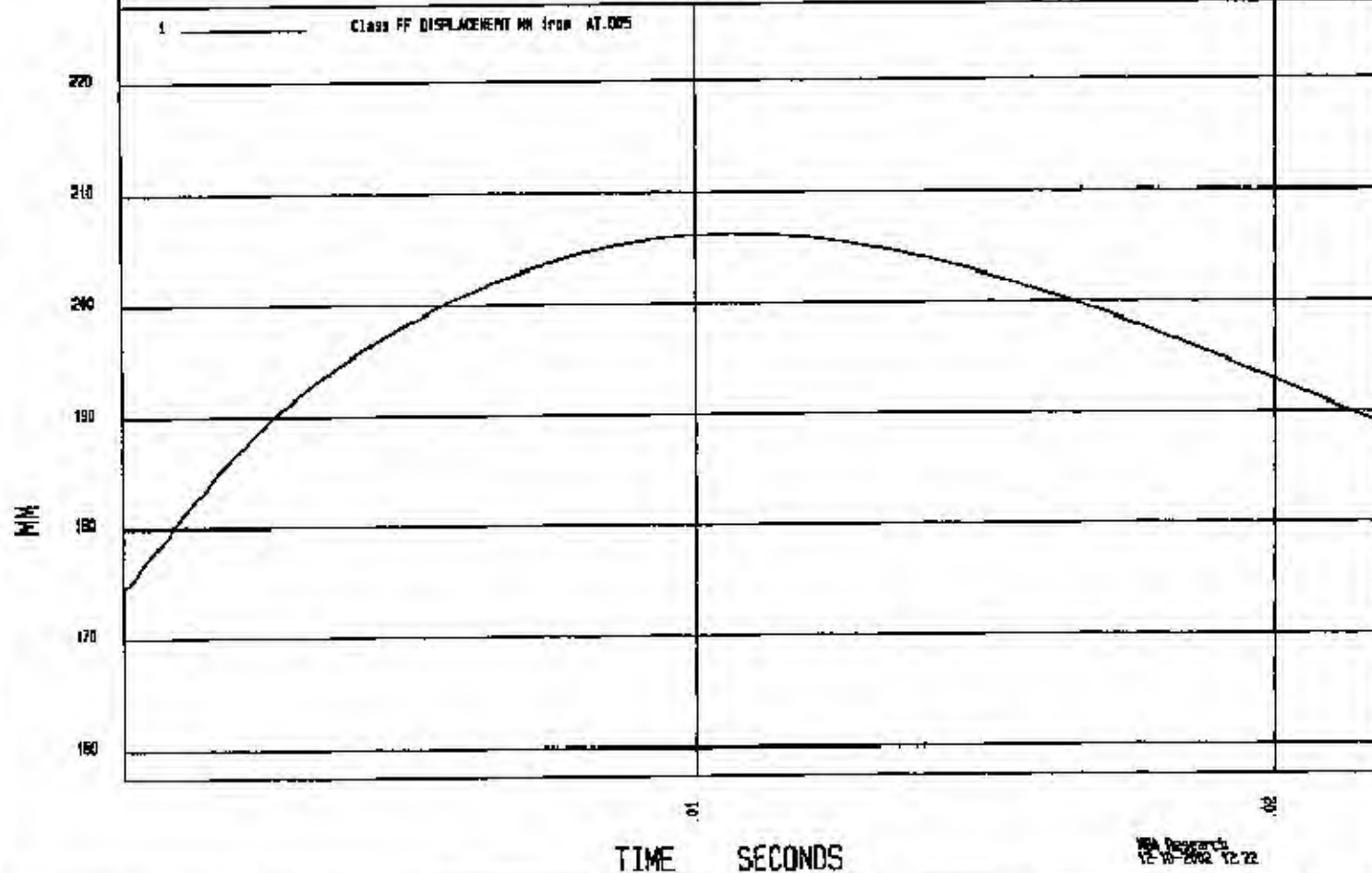
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

COMPONENT: TEST #1 (FM2385), R/S AP3, H/V=159/44

YMIN= 174.8171 MM at .000 msec

YMAX= 206.2011 MM at 10.8 msec

### DISPLACEMENT



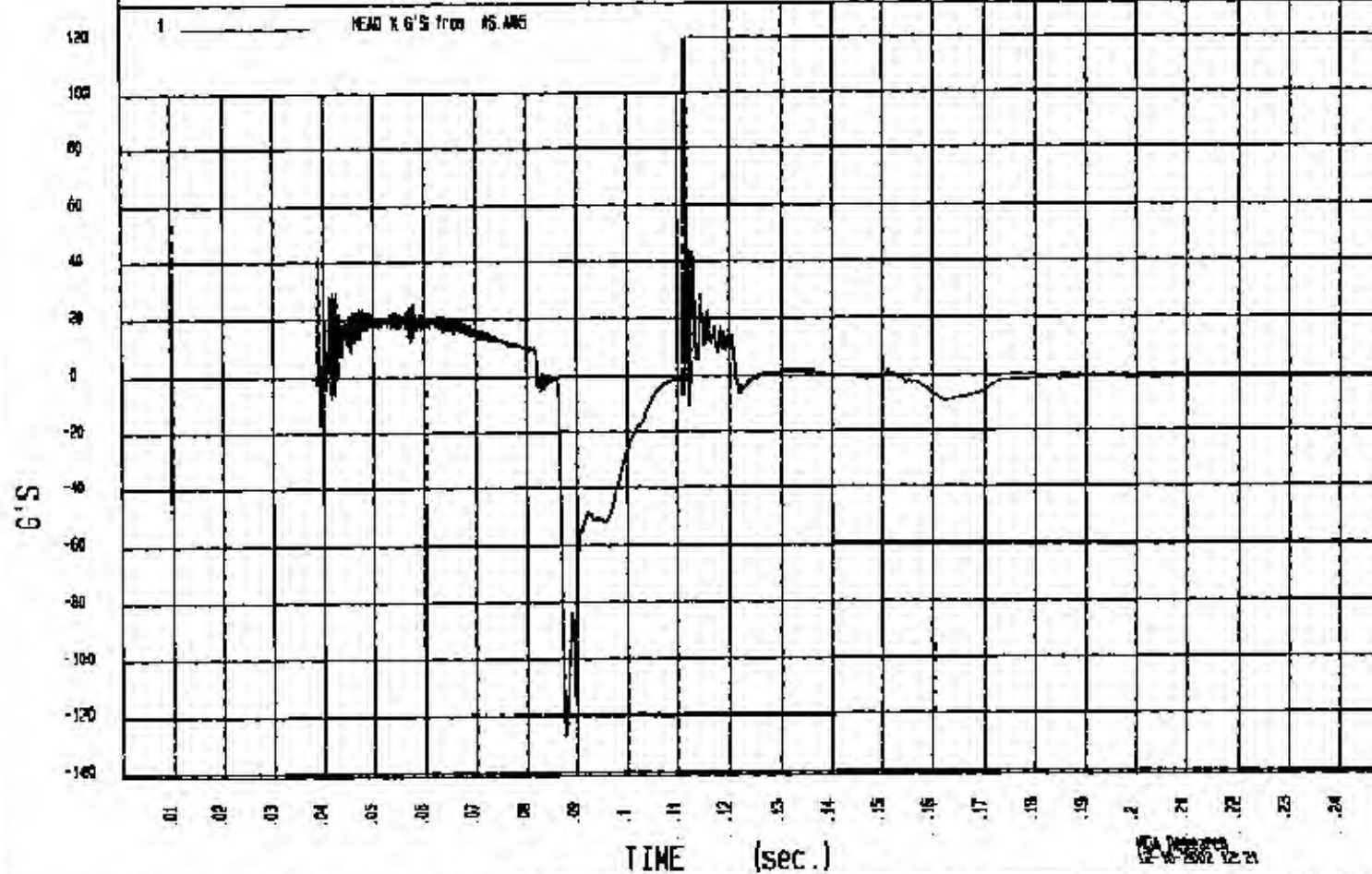
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

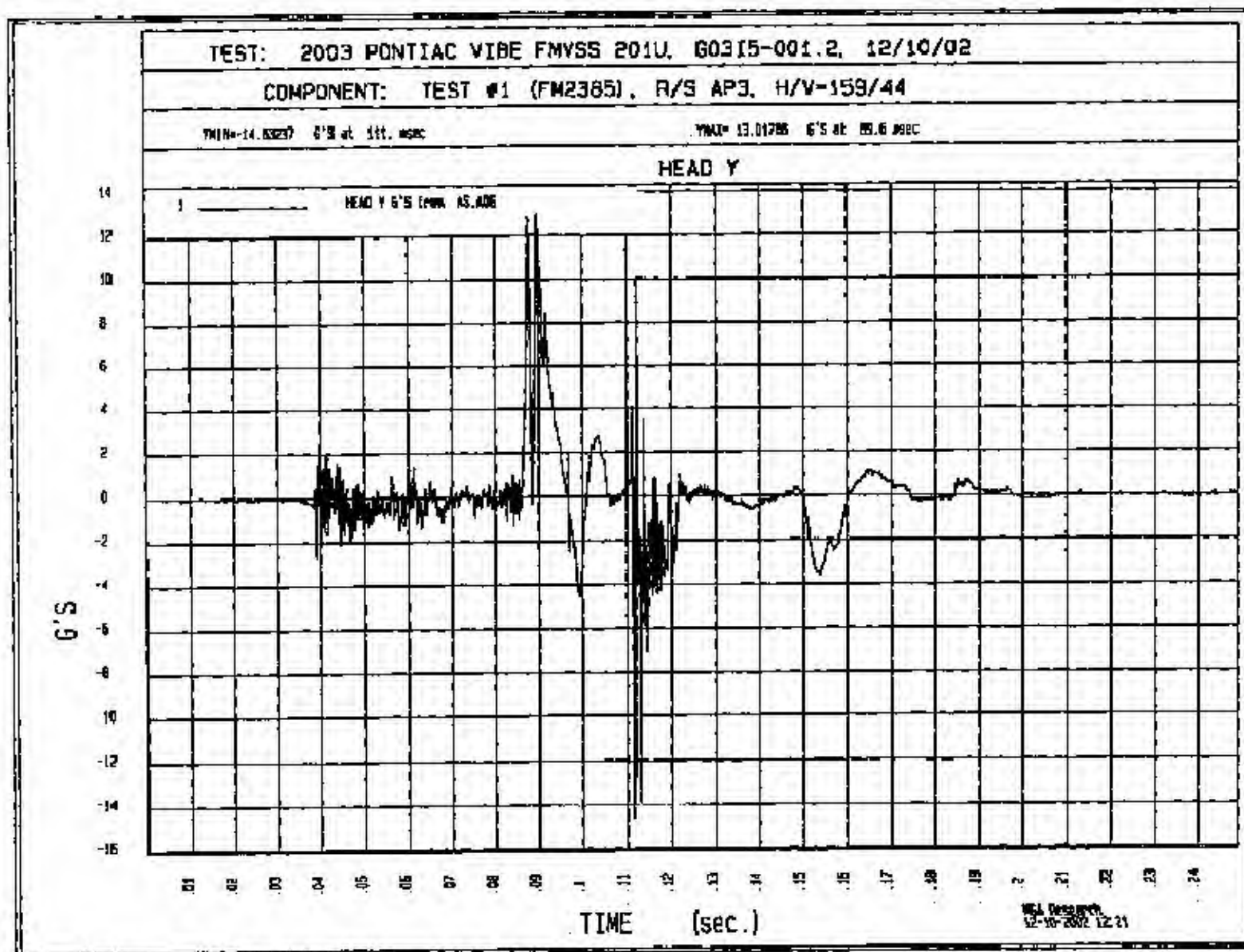
COMPONENT: TEST #1 (FM2385), R/S AP3, H/V-159/44

MIN=-128.3432 G'S at 87.5 msec

MAX=119.9280 G'S at 111. msec

HEAD X





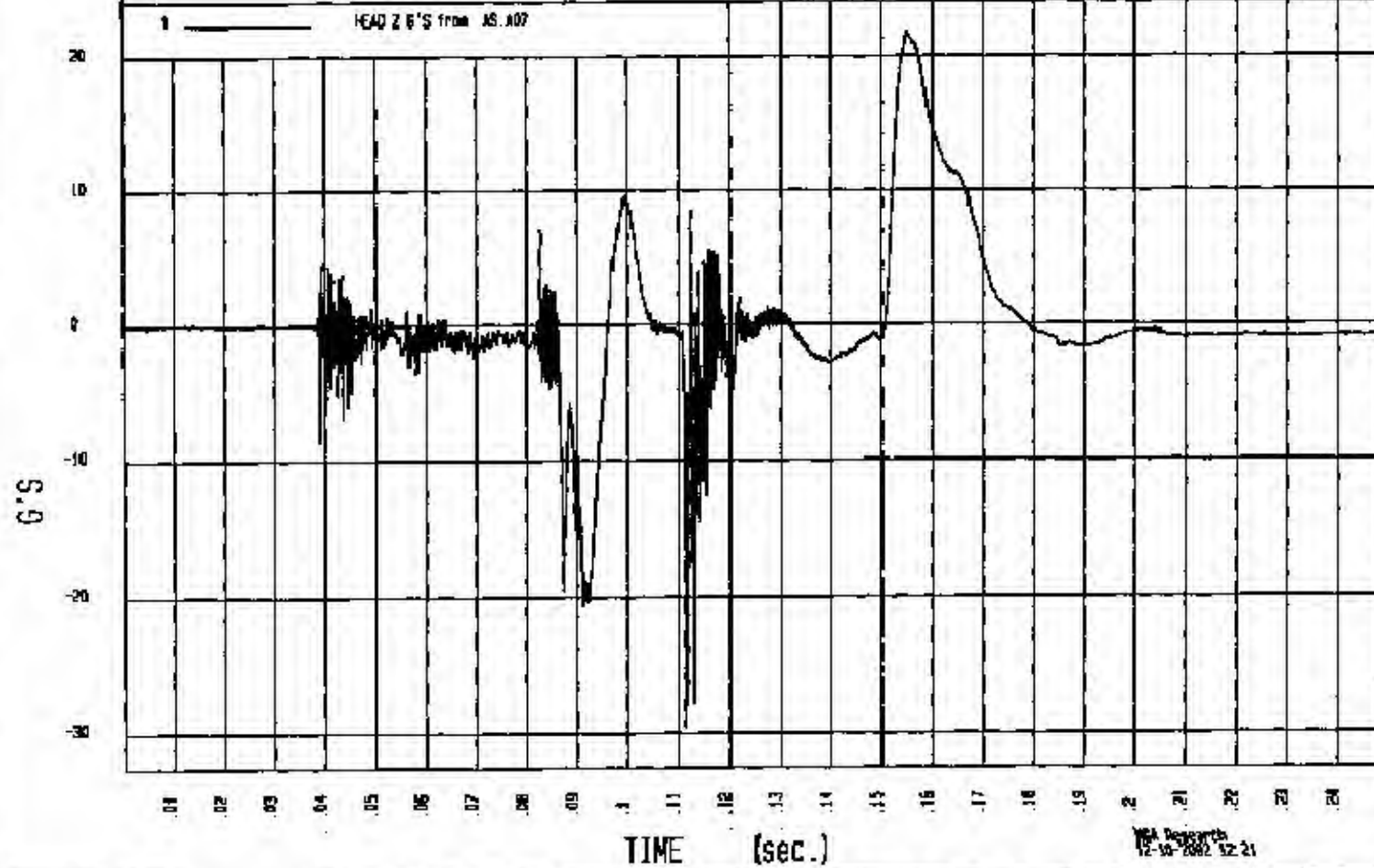
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

COMPONENT: TEST #1 (FM2385), R/S AP3, H/V=159/44

YMIN=-29.57337 G'S at 111. msec

YMAX= 21.08200 G'S at 154. msec

HEAD Z



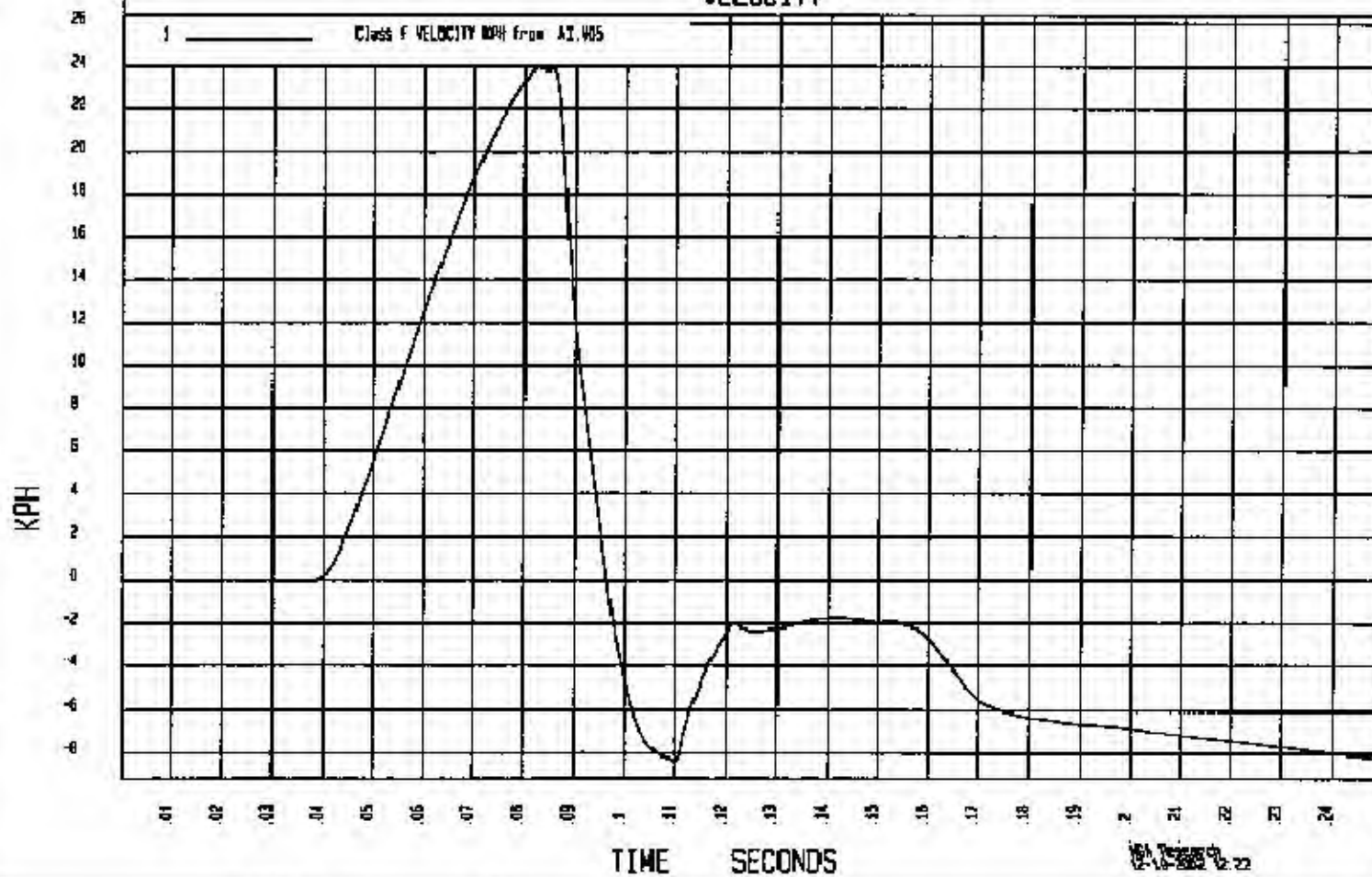
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

COMPONENT: TEST #1 (FM2385), R/S AP3, H/V=159/44

YMIN=-8.20267 KPH at 110. msec

YMAX=23.90853 KPH at 82.4 msec

### VELOCITY





ALIA RESEARCH CORP  
FIVS 2010 TESTING  
200 PONTIAC AVE

T-10105

T-10002

TEST ID

CH01 BP1

T-10005

JUN - 90/20

PRE-TEST



MGA RESEARCH CORP  
FIDYSS 2010 TESTING  
2003 PONTIAC VIBE

CV0105

12/00/02

TEST #1  
(FM2588)

NIGHT RPT  
31-V-90/20

POST-TEST



MGA RESEARCH CORP  
FATIGUE LIFE TESTING  
2003 PONTIAC VIBE

C30105

12/10/02

TEST #4

RIGHT DP3

(FMEAR)

H/V = 90/20

POST-TEST

MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME #23

DOC. NO.: MGATP201U\_FRAME #2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC Vibe

#### GENERAL TEST PARAMETERS:

Test Number: 4

Target (Vehicle Side): left (gh) BPI

Temperature: 74 °F

MGA Test Reference No.: FM2388

Humidity: 22 %

Approach Angles: Horizontal 90 °

Time of Test: 3:36 am/pm

Vertical 20 °

FMH Serial No: 35

#### TEST RESULTS:

HIC(d)	HIC	$\Delta t$ (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	<u>Left/Right</u> Pt. O
<u>623</u>	<u>605</u>	<u>7.0</u>	<u>23.7</u>	<u>75</u>	<u>6</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7284-2000)

Axis	Channel	Serial No.	DLR Value	$\Delta V$ Pre-Test	$\Delta V$ Post-Test
<u>X</u>	<u>5</u>	<u>J35924</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J35919</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J31051</u>	<u>95.7</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By\*: [Signature] Date: 12/10/02

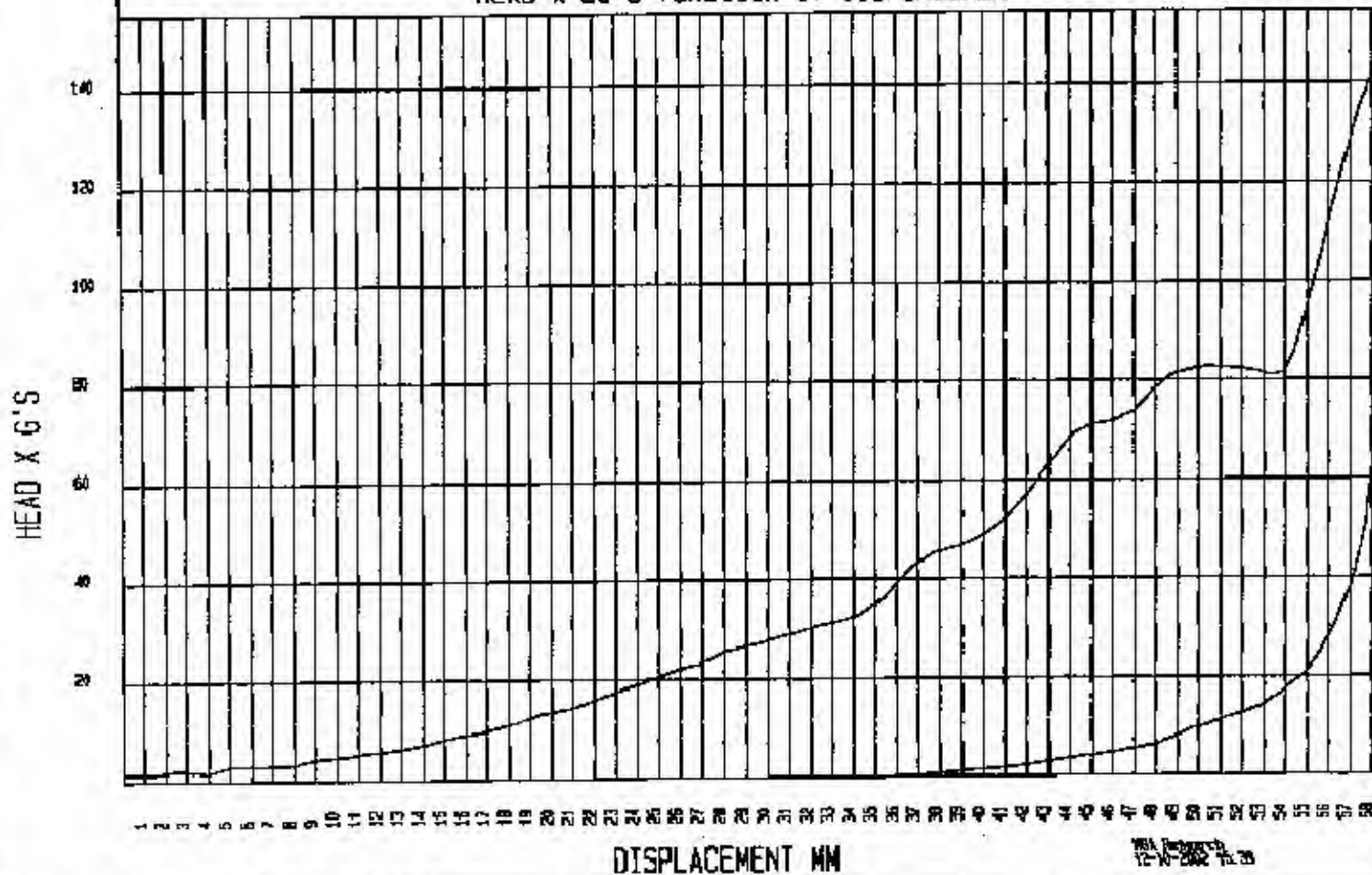
\*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM2388AV.A05
HIC = 604.97 calculated over 7.0 msec
T1 = 6.57 msec T2 = 13.55 msec
*****
HIC(d) = 623
Impact Velocity = 23.7 (kph)
```

TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/10/02

COMPONENT: TEST #4 (FM2368), R/S BP1, H/V-90/20

HEAD X as a function of DISPLACEMENT





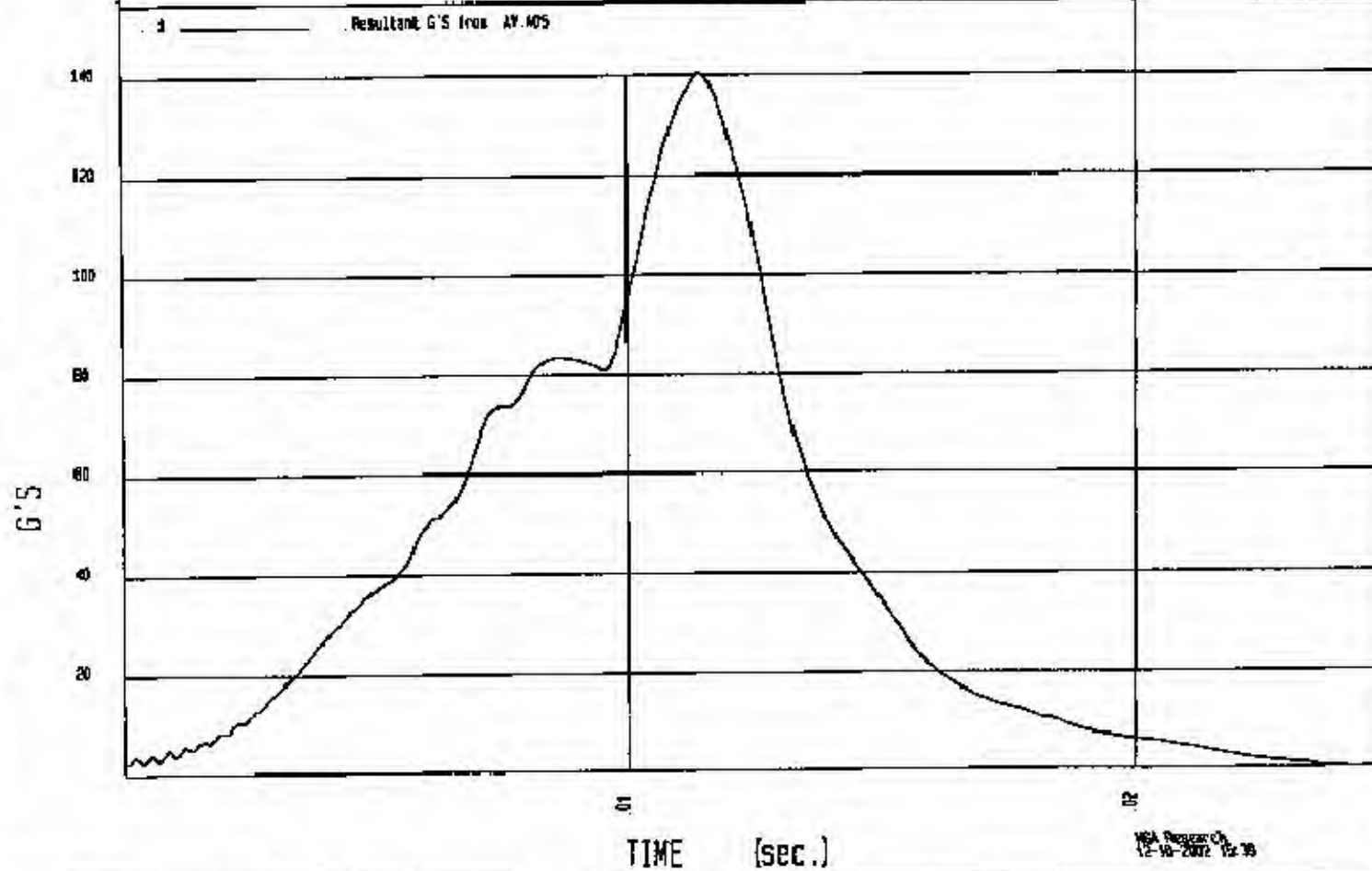
TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-D01.2, 12/10/02

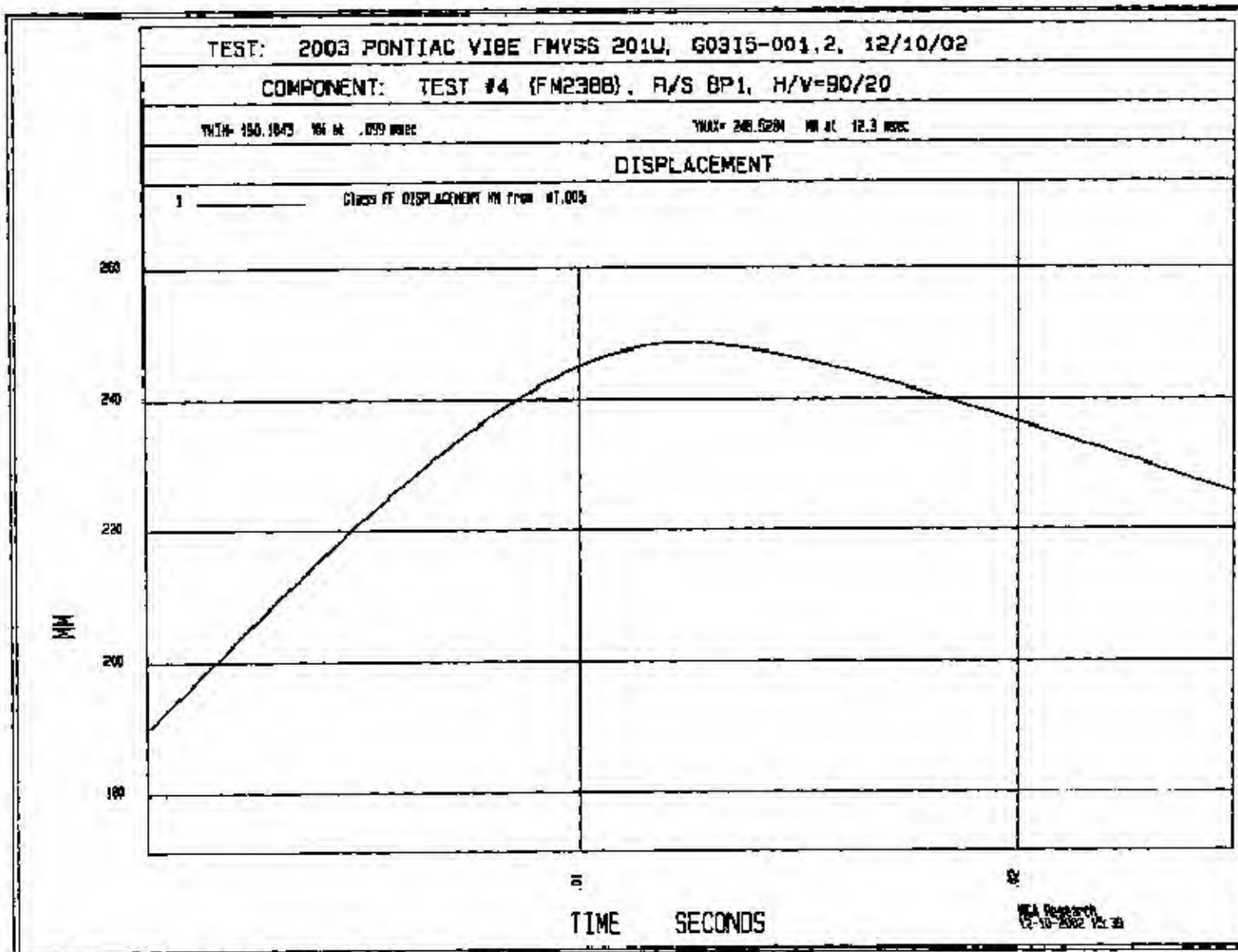
COMPONENT: TEST #4 (FM2388), R/S BP1, H/V=90/20

YMIN= .2401199 G'S at 24.9 msec

YMAX= 140.5461 G'S at 11.4 msec

FMH RESULTANT





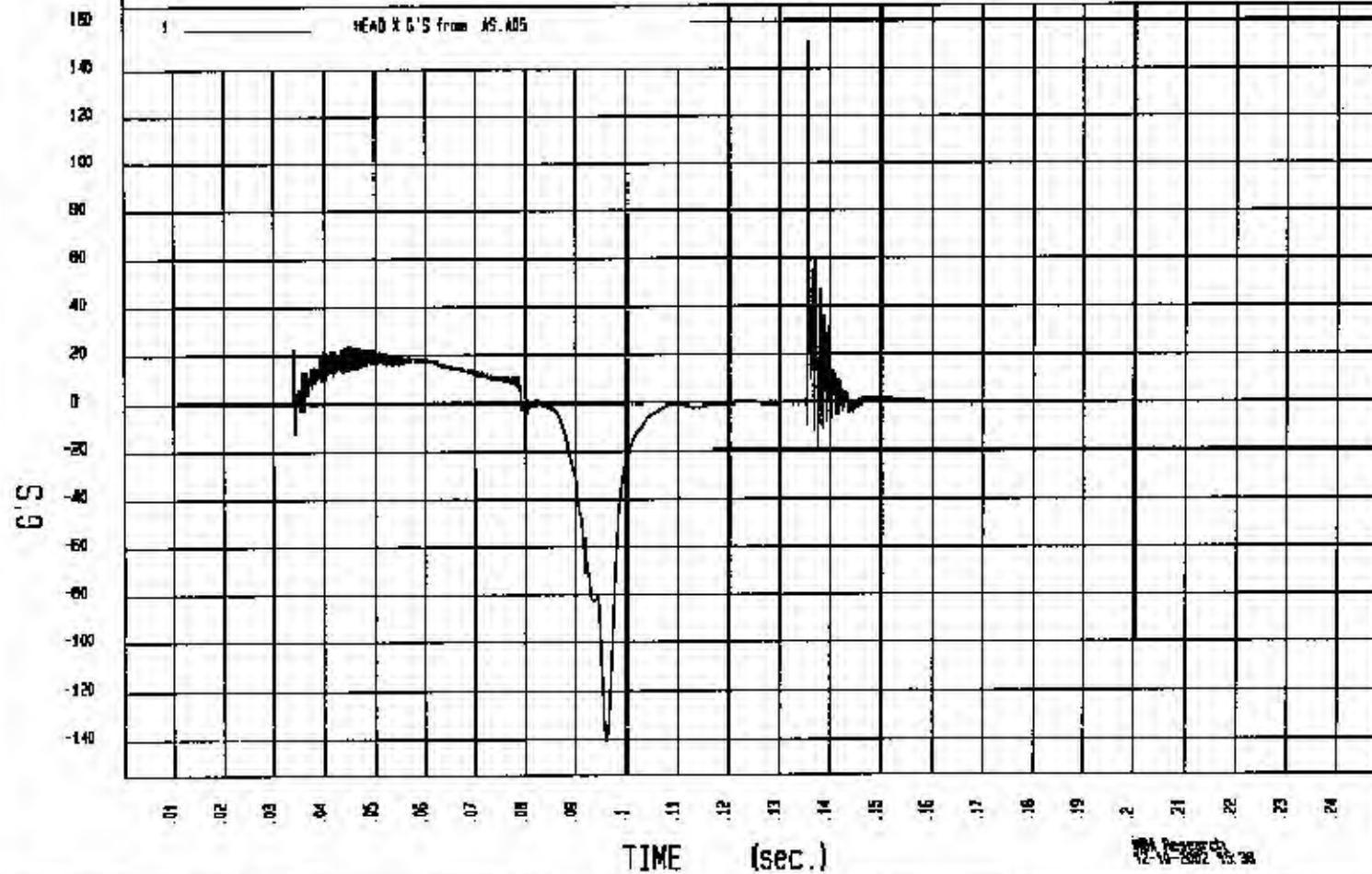
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

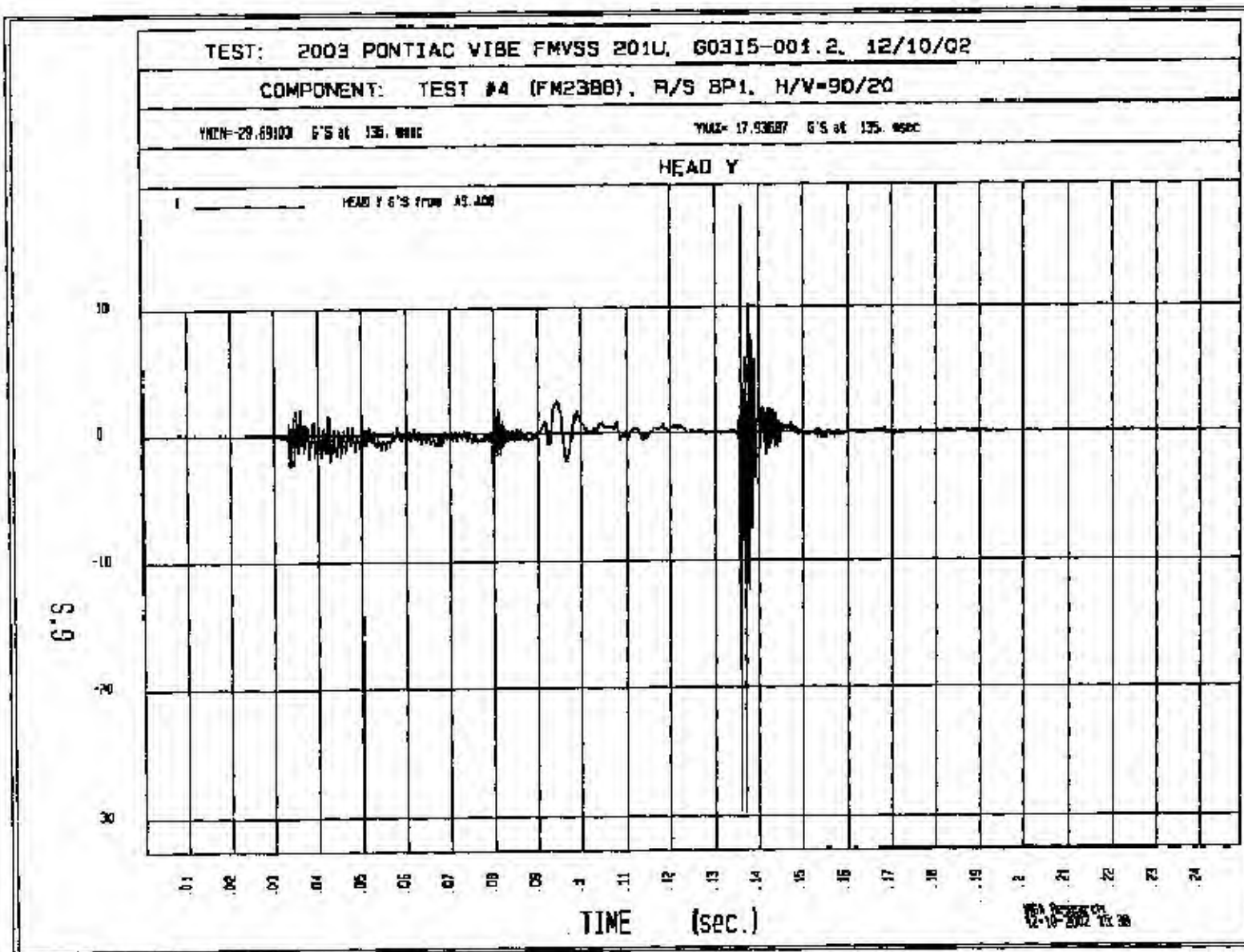
COMPONENT: TEST #4 (FM2380), R/S BP1, H/V=90/20

YMIN=-140.6346 G'S at 96.1 msec

YMAX=151.1134 G'S at 135. msec

HEAD X



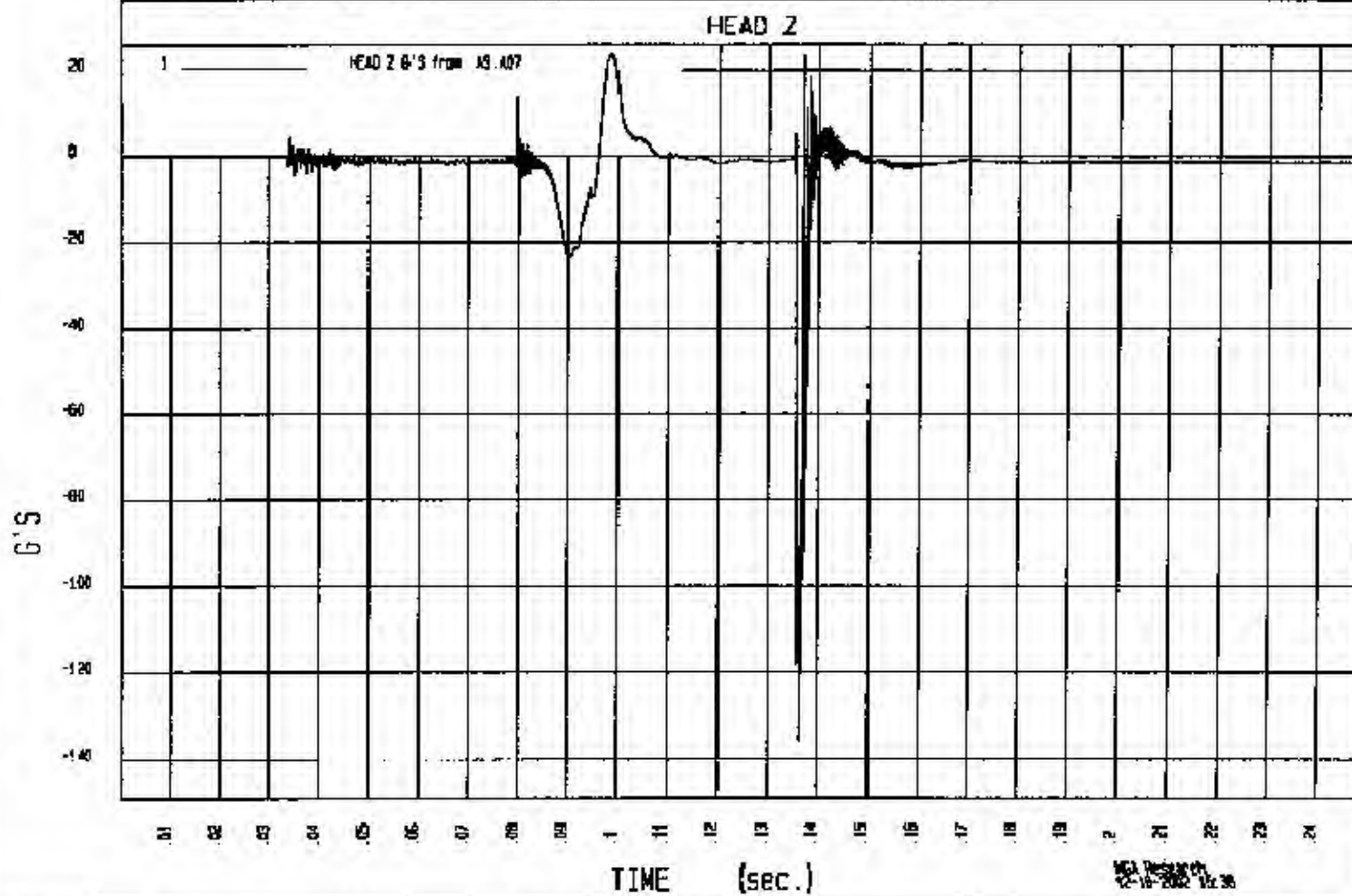


TEST: 2003 PONTIAC VIBE FMVSS 2010, 60315-001.2, 12/10/02

COMPONENT: TEST #4 (FM2388), R/S BP1, H/V=90/20

YMIN=-135.4081 G'S at 135. msec

YMAX= 23.46551 G'S at 99.7 msec



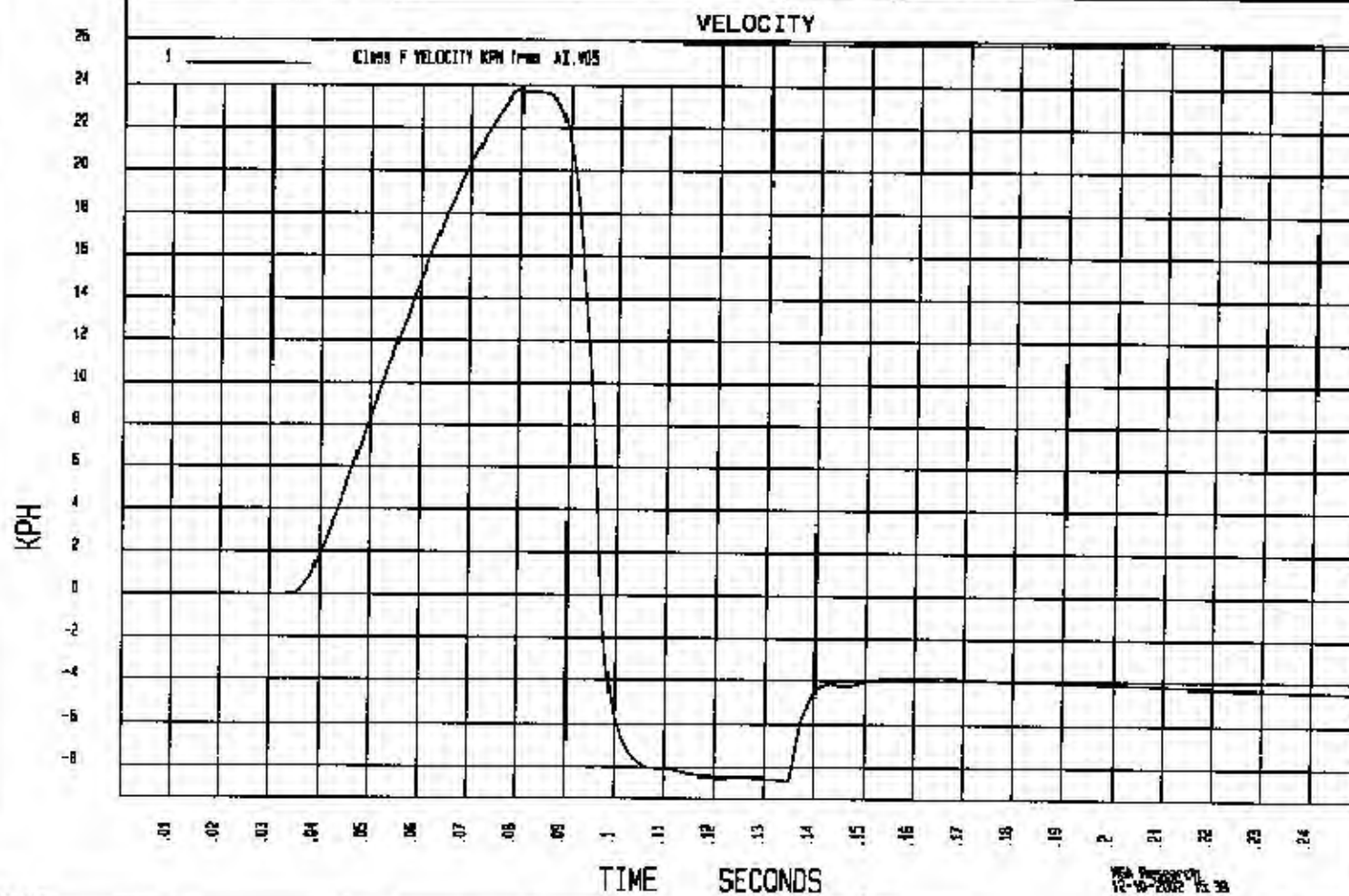


TEST: 2003 PONTIAC VIBE FMVSS 2010. G0315-001.2. 12/10/02

COMPONENT: TEST #4 (FM2388). R/S BP1. H/V=90/20

YMIN=-8.607393 KPH at 134. msec

YMAX=23.70573 KPH at 79.4 msec



MEGA RESEARCH CORP.  
EMISS 201U TESTING  
2003 PONTIAC VIBE

C30105

11/10/02

TEST #3  
(FAR2187)

RIGHT BP2  
11/11/02

PRE-TEST



MGA RESEARCH CORP  
FMS 88.201U TESTING  
2803 PONTIAC AVE

C30105

12/10/02

TEST #3  
(FM2387)

RIGHT BP2  
H/V - 90/4

POST-TEST



MGA RESEARCH CORP  
FMVSS 2010 TESTING  
2003 PONTIAC VIBE

C30105

12/30/02

TEST #3  
(FM2387)

RIGHT BP2  
HV = 90.4

POST-TEST

MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME #13

DOC. NO: MGATP201U\_FRAME #2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC VIBE

#### GENERAL TEST PARAMETERS:

Test Number: 3

Target (Vehicle Side): left/right BP2

Temperature: 73 °F

MGA Test Reference No.: FM2387

Humidity: 22 %

Approach Angles: Horizontal 90 °

Time of Test: 2:13 am/pm pm

Vertical 4 °

FMH Serial No: 38

#### TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>551</u>	<u>510</u>	<u>9.4</u>	<u>23.9</u>	<u>3</u>	<u>2</u>

#### INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J36197</u>	<u>-108.2</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J36193</u>	<u>102.0</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36353</u>	<u>97.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

THE D-RING WAS COMPRESSED INTO THE PLATE DURING  
THE TEST

Recorded By: [Signature] Approved By\*: [Signature] Date: 12/10/02

\* Only necessary for NHTSA (Government) Compliance testing.



\*\*\*\*\*

RESULTS OF HIC36 PROGRAM

\*\*\*\*\*

The input file is \NHTSA\FM2387AV.A05

The HIC = 510.29 calculated over 9.4 msec

T1 = 1.29 msec T2 = 10.66 msec

\*\*\*\*\*

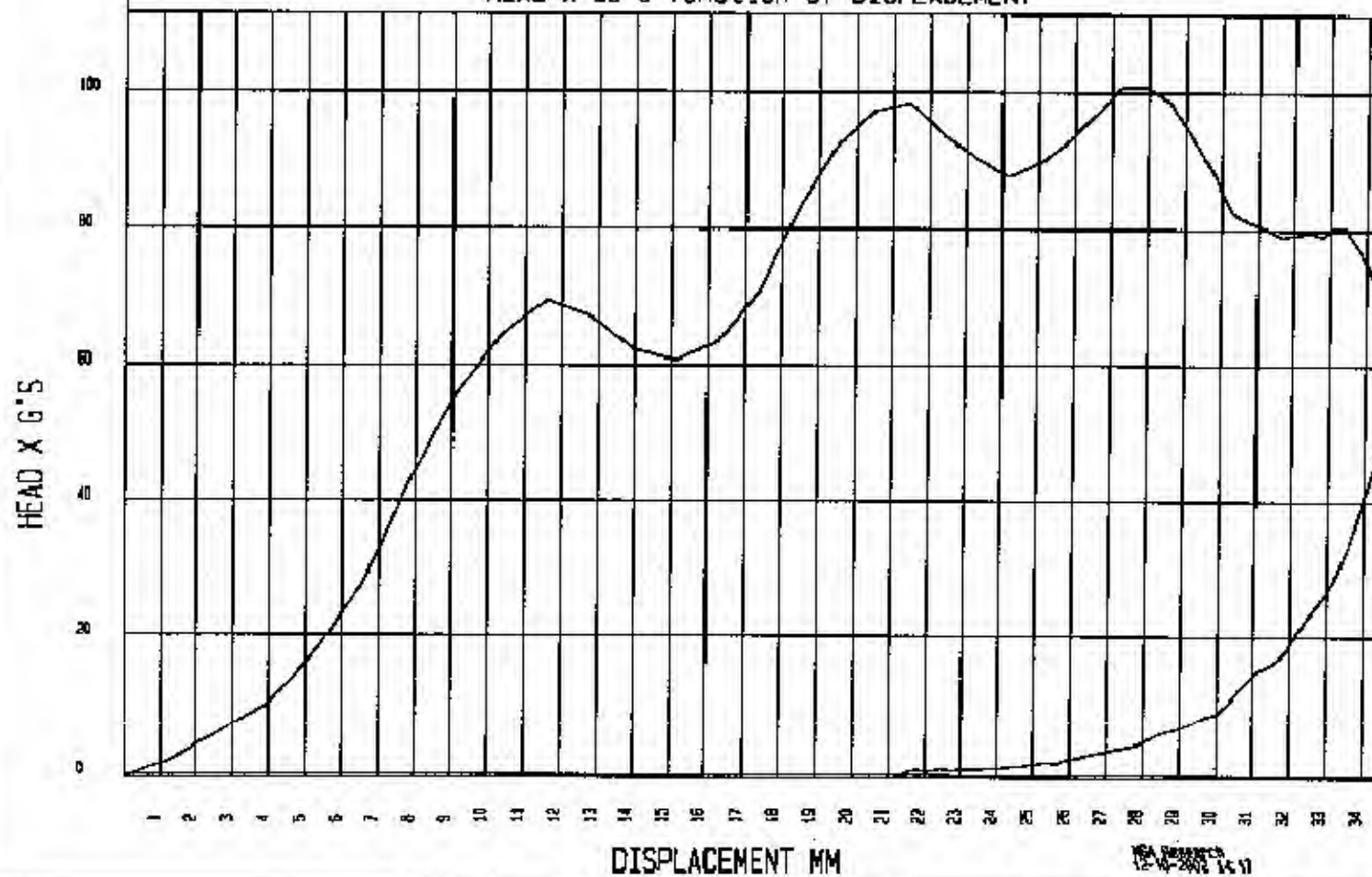
HIC(d) = 551

Impact Velocity = 23.9 (kph)

TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/10/02

COMPONENT: TEST #3 (FM2387), R/S BP2, H/V=90/4

HEAD X as a function of DISPLACEMENT



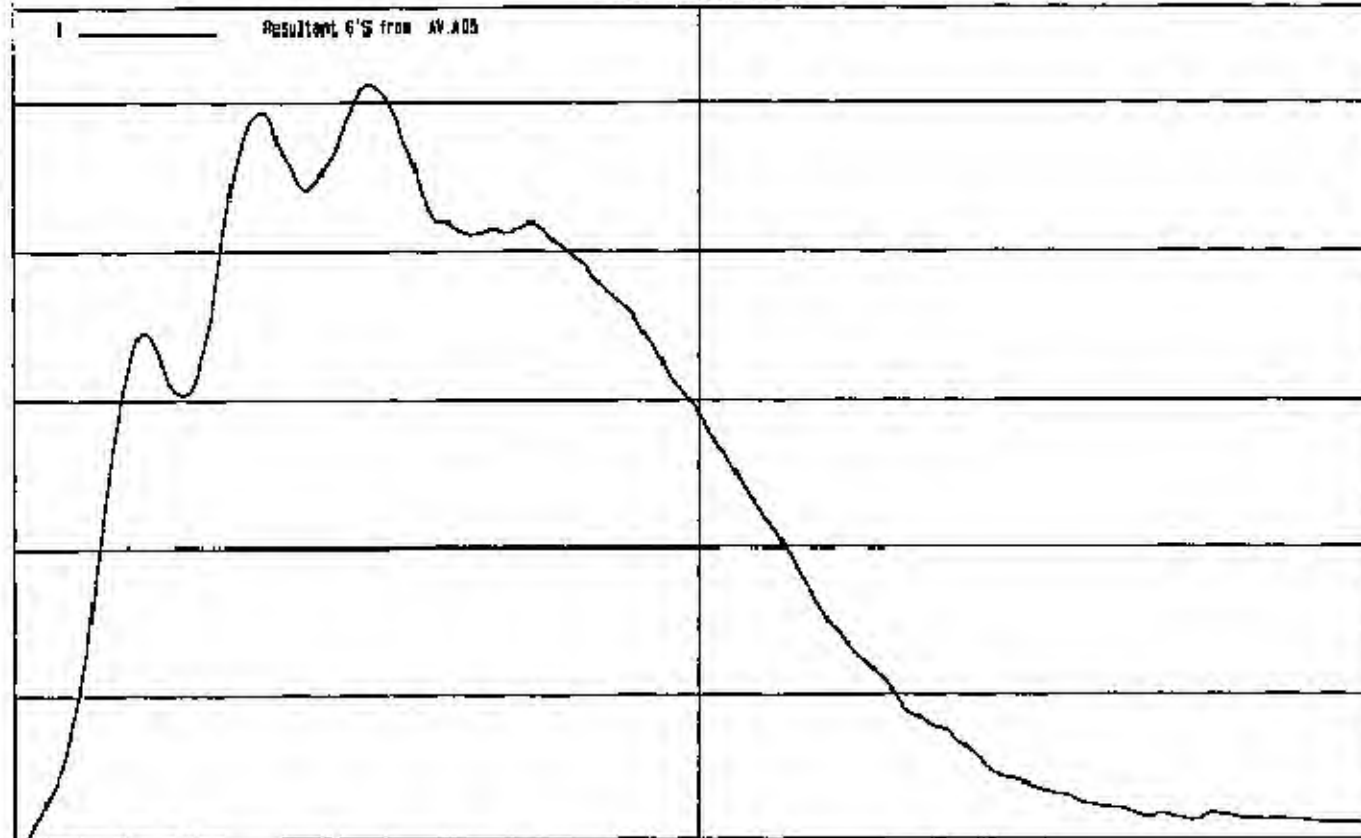
TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/10/02

COMPONENT: TEST #3 (FM2387), R/S BP2, H/V=90/4

TIME: 938.192 G'S at 9.95 msec

TIME: 102.492 G'S at 5.17 msec

### FMH RESULTANT



TIME (sec.)

12-10-2002 14:17

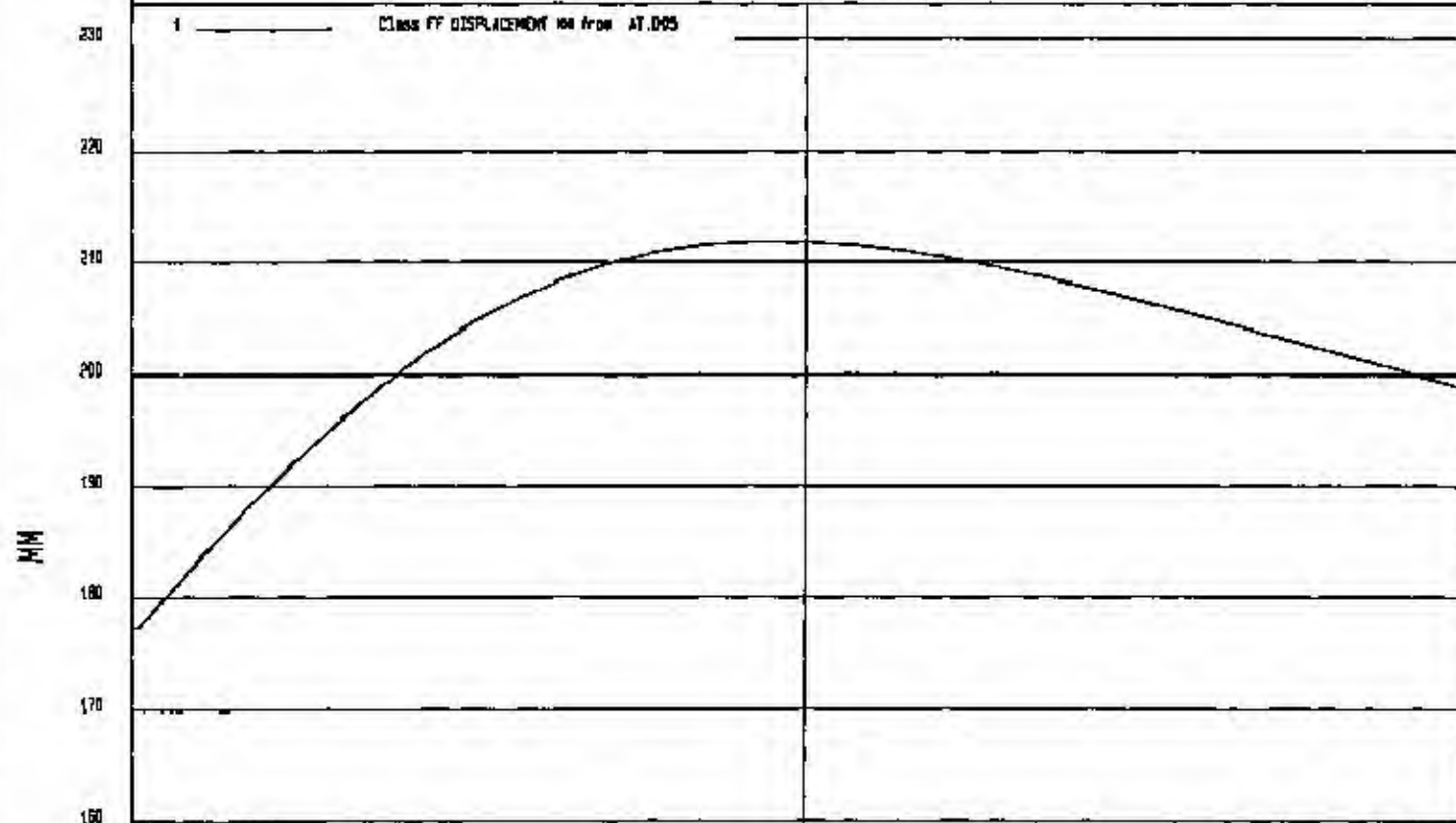
TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/10/02

COMPONENT: TEST #3 (FM2387), R/S 8P2, H/V=90/4

YMIN= 177.3535 MM at .099 msec

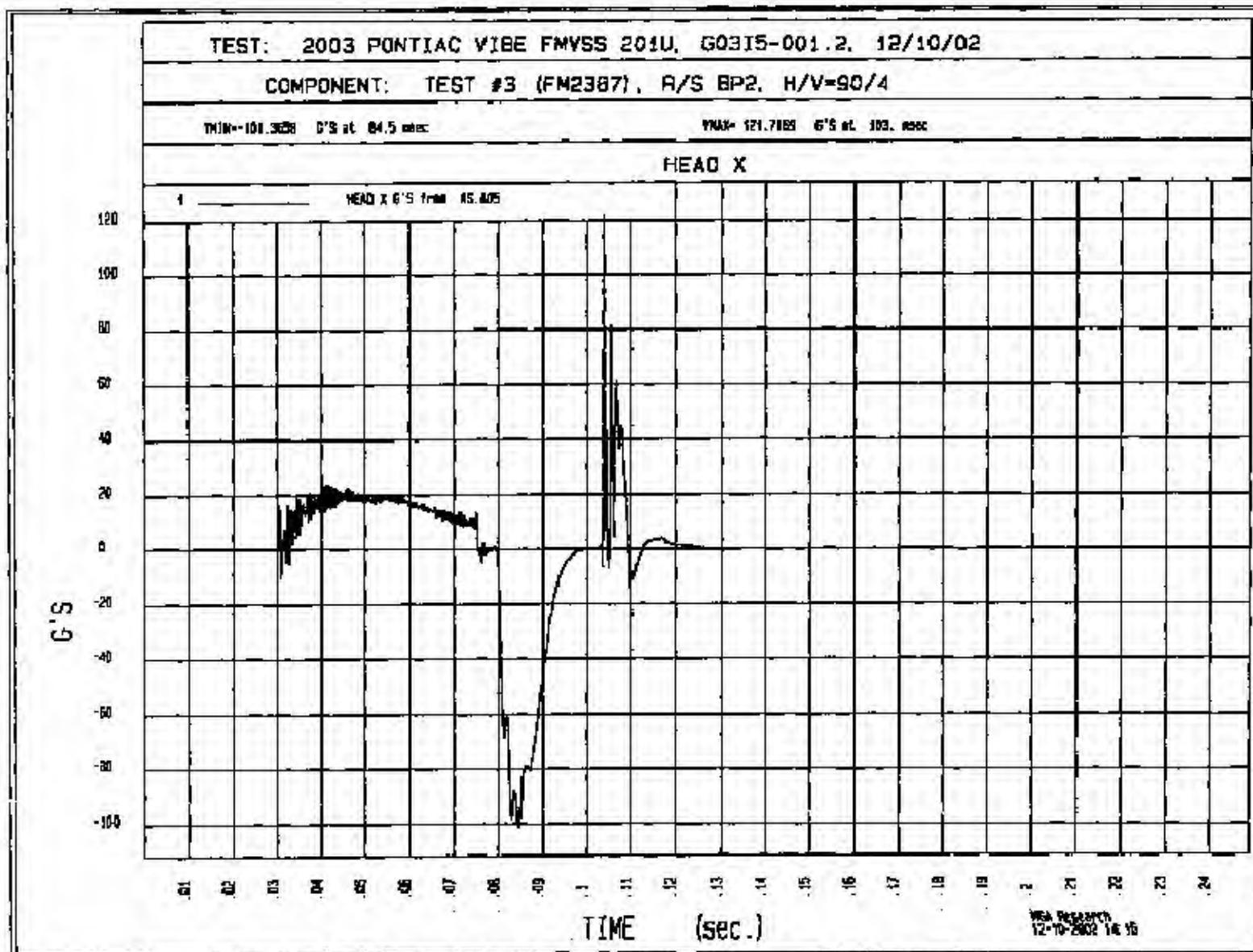
YMAX= 211.9128 MM at 9.56 msec

DISPLACEMENT



TIME SECONDS

MEA Program Ch  
12-10-2002 14:17





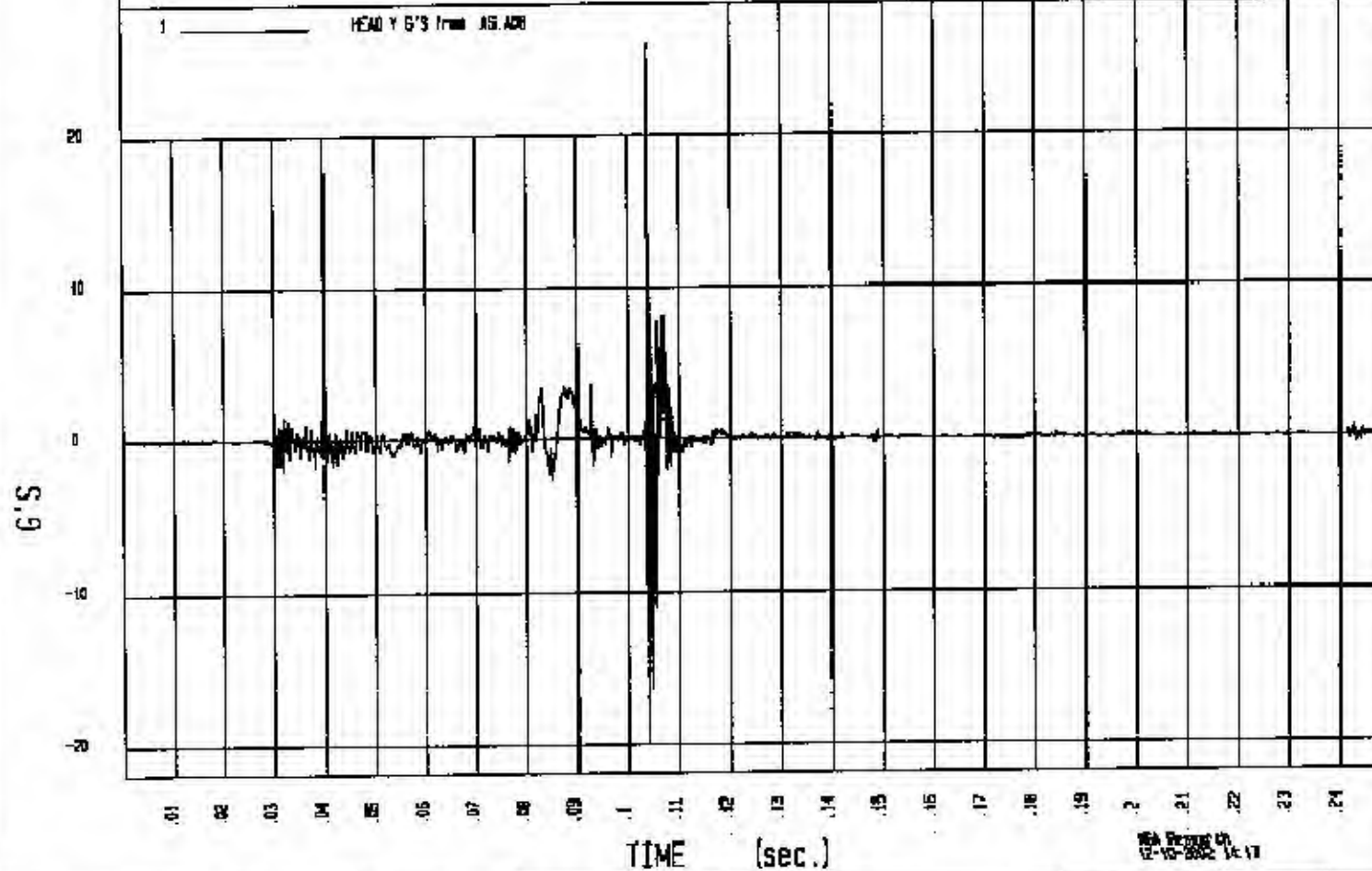
TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/10/02

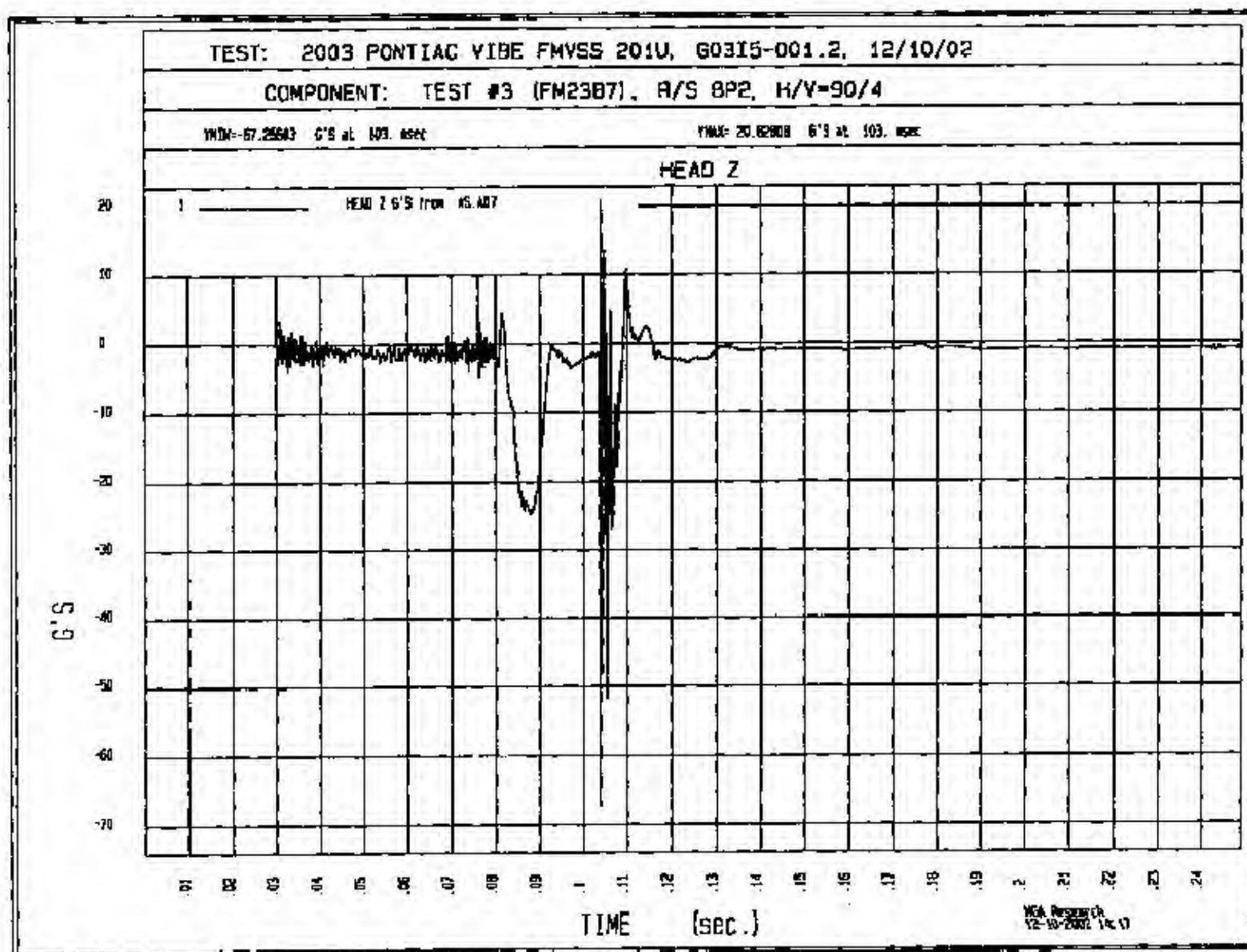
COMPONENT: TEST #3 (FM2367), R/S BP2, H/V=90/4

MIN=-19.85095 G'S at 104. msec

MAX=25.97159 G'S at 103. msec

HEAD Y





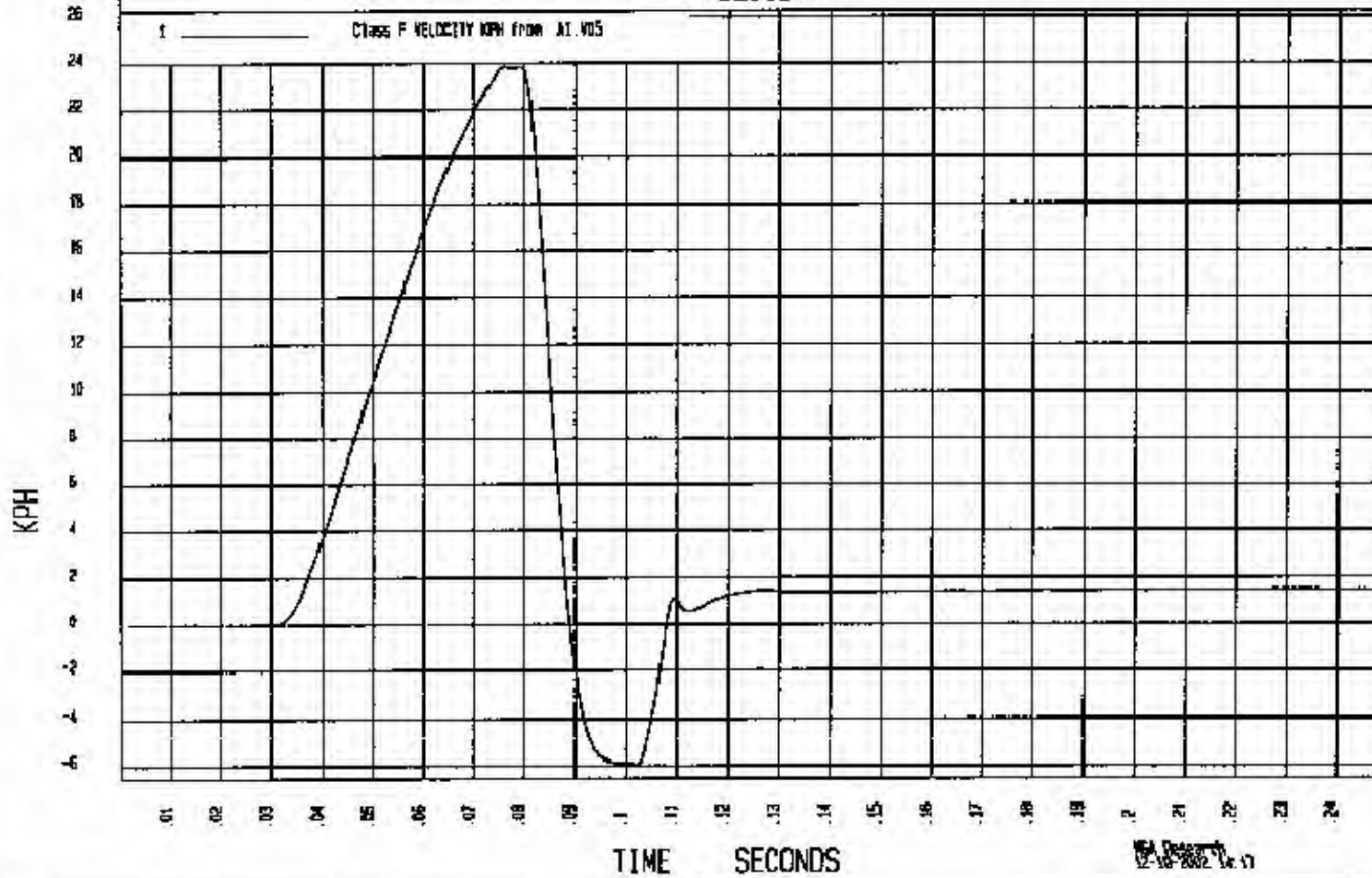
TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

COMPONENT: TEST #3 (FM2387), R/S BP2, H/V=90/4

YMIN=-5.93365 MPH at 102. msec

YMAX=23.96472 MPH at 75.9 msec

### VELOCITY





MGA RESEARCH CORP.  
FMY-88 2011 TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST: 66  
(EM12390)

RIGHT LMP  
H/V = 70.00

PRE-TEST



MGA RESEARCH CORP  
EMVSS 2010 TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #6

RIGHT OF1

(0 AL2390)

H/V = 90.76

POST-TEST



MCA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #6  
(FMVSS 201U)

RIGHT OP1  
HV = 90/6

POST-TEST

MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME #2.3

DOC. NO.: MGATP201U\_FRAME #2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC VIBE

#### GENERAL TEST PARAMETERS:

Test Number: 6

Target (Vehicle Side): left light OPI

Temperature: 73 °C

MGA Test Reference No.: FM2392

Humidity: 22 %

Approach Angles: Horizontal 90 °

Time of Test: 9:09 am/pm

Vertical 6 °

FMH Serial No: 38

#### TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
<u>512</u>	<u>458</u>	<u>5.9</u>	<u>23.6</u>	<u>8</u>	<u>2</u>

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
<u>X</u>	<u>5</u>	<u>J36197</u>	<u>-102.2</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>J36193</u>	<u>102.0</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>J36353</u>	<u>97.8</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

THE D-RING WAS COMPRESSED INTO THE PULVER

Recorded By: [Signature] Approved By: [Signature] Date: 12/11/02

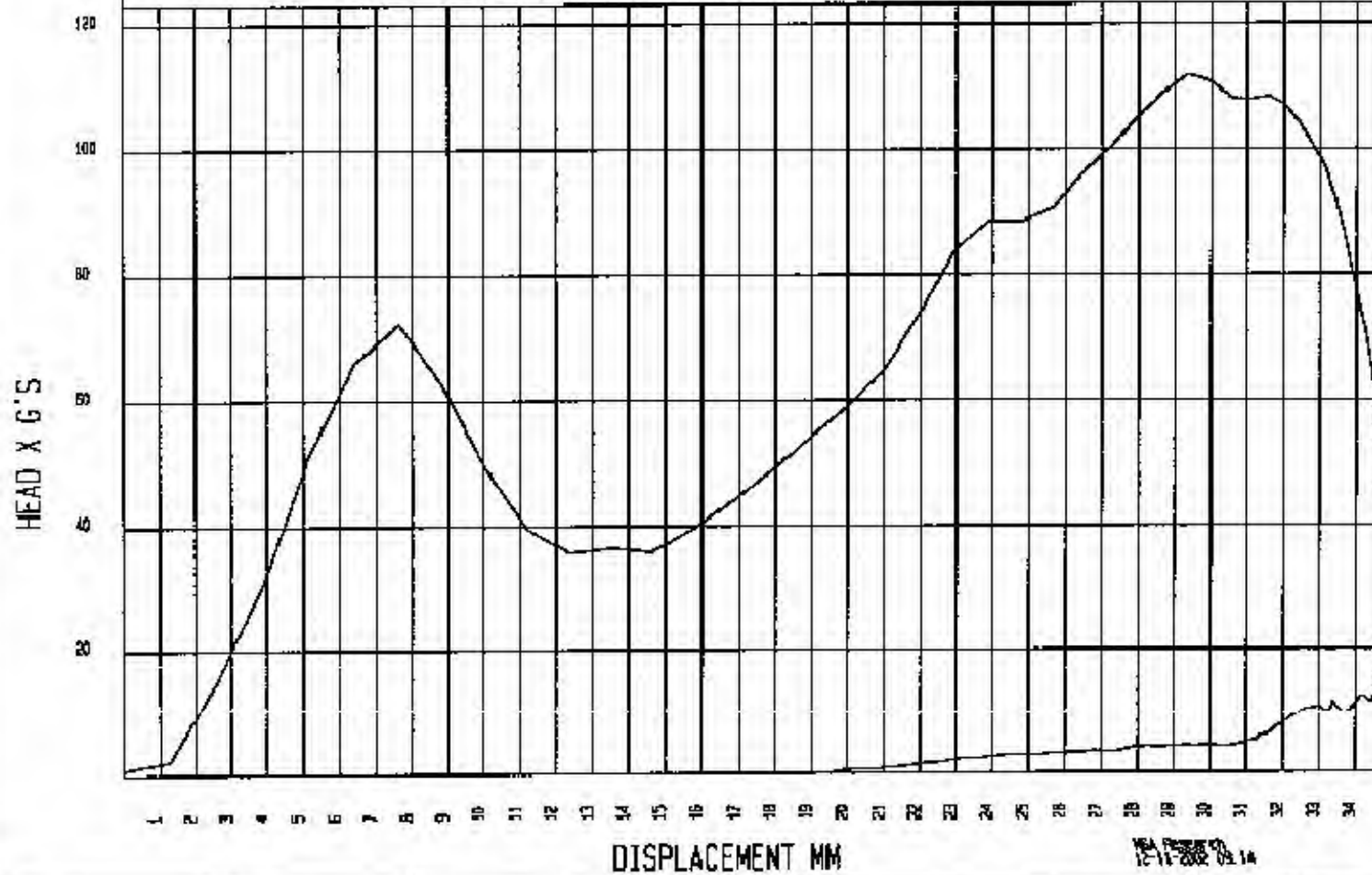
\* Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\FM2390AV.A05
HIC = 457.88 calculated over 5.9 msec
T1 = 3.09 msec T2 = 8.96 msec
*****
HIC(d) = 512
Impact Velocity = 23.6 (kph)
```

TEST: 2003 PONTIAC VIBE FMVSS 2010, 60315-001.2, 12/11/02

COMPONENT: TEST #6 (FM2390), R/S OP1, H/V=90/6

HEAD X as a function of DISPLACEMENT





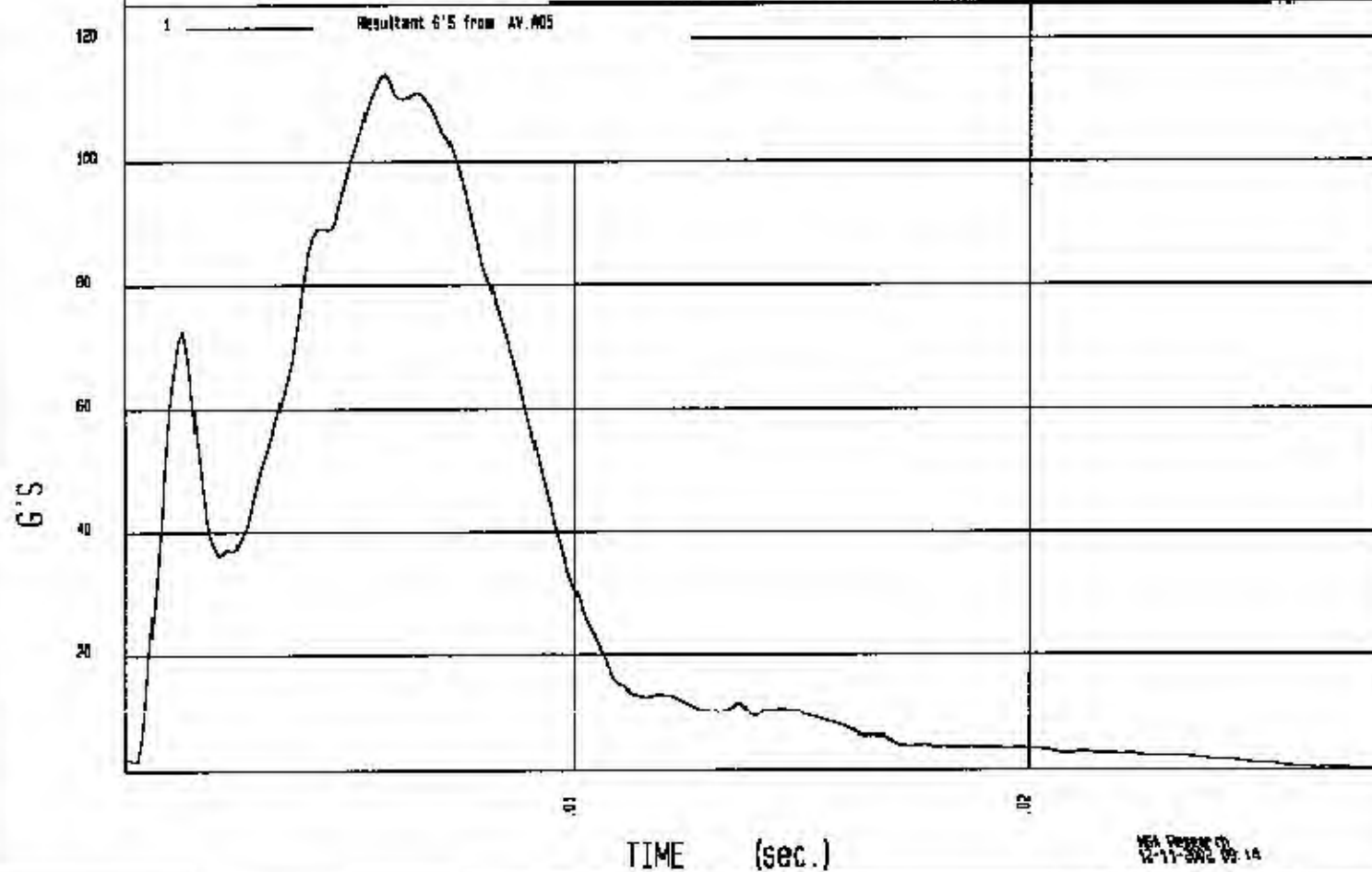
TEST: 2003 PONTIAC VIBE FMVSS 201U, G0315-001.2, 12/11/02

COMPONENT: TEST #6 (FM2390), R/S OP1, H/V=90/6

YMIN= 1.46013 G'S at 27.3 msec

YMAX= 114.2141 G'S at 5.77 msec

FMH RESULTANT





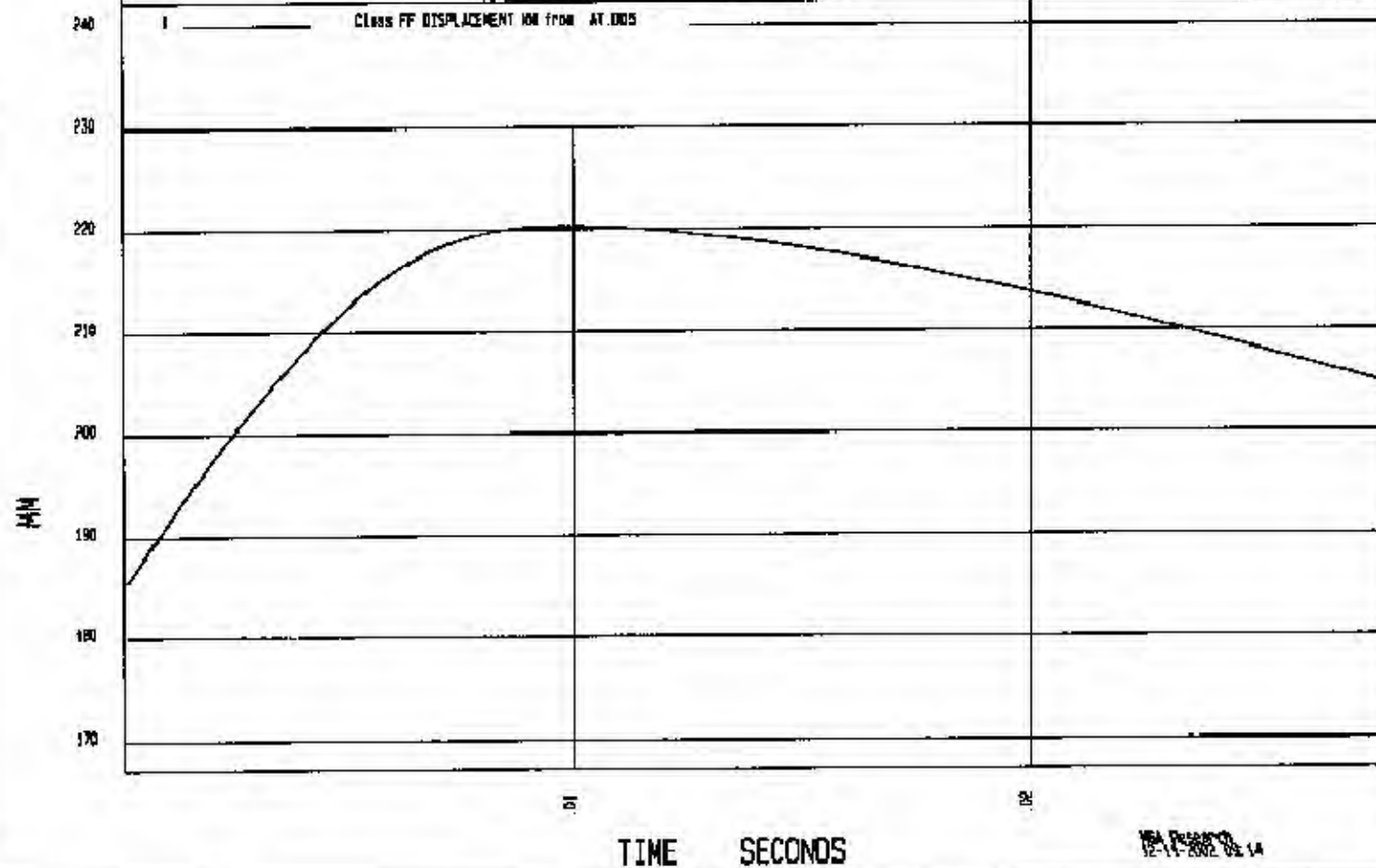
TEST: 2003 PONTIAC VIBE FMYSS 201U, G03I5-001.2, 12/11/02

COMPONENT: TEST #6 (FM2390), R/S DP1, H/V=90/6

YMIN= 195.6053 MM at .099 msec

YMAX= 220.3331 MM at 9.76 msec

### DISPLACEMENT

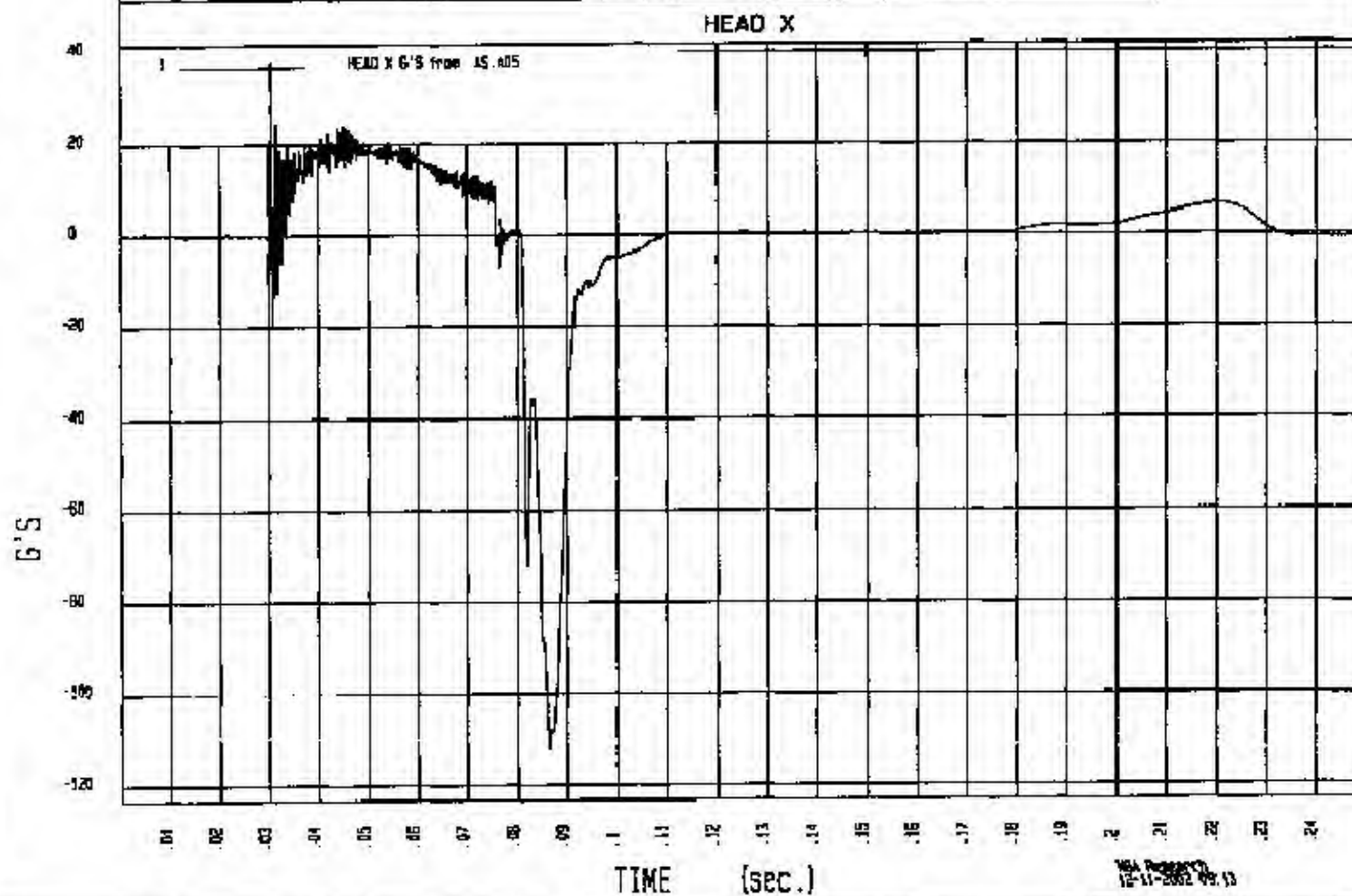


TEST: 2003 PONTIAC VIBE FMVSS 2010, 60315-001.2, 12/11/02

COMPONENT: TEST #6 (FN2390), R/S OP1, H/V=90/6

MIN=-111.9993 G'S at 36.4 msec

MAX=37.77224 G'S at 30.4 msec



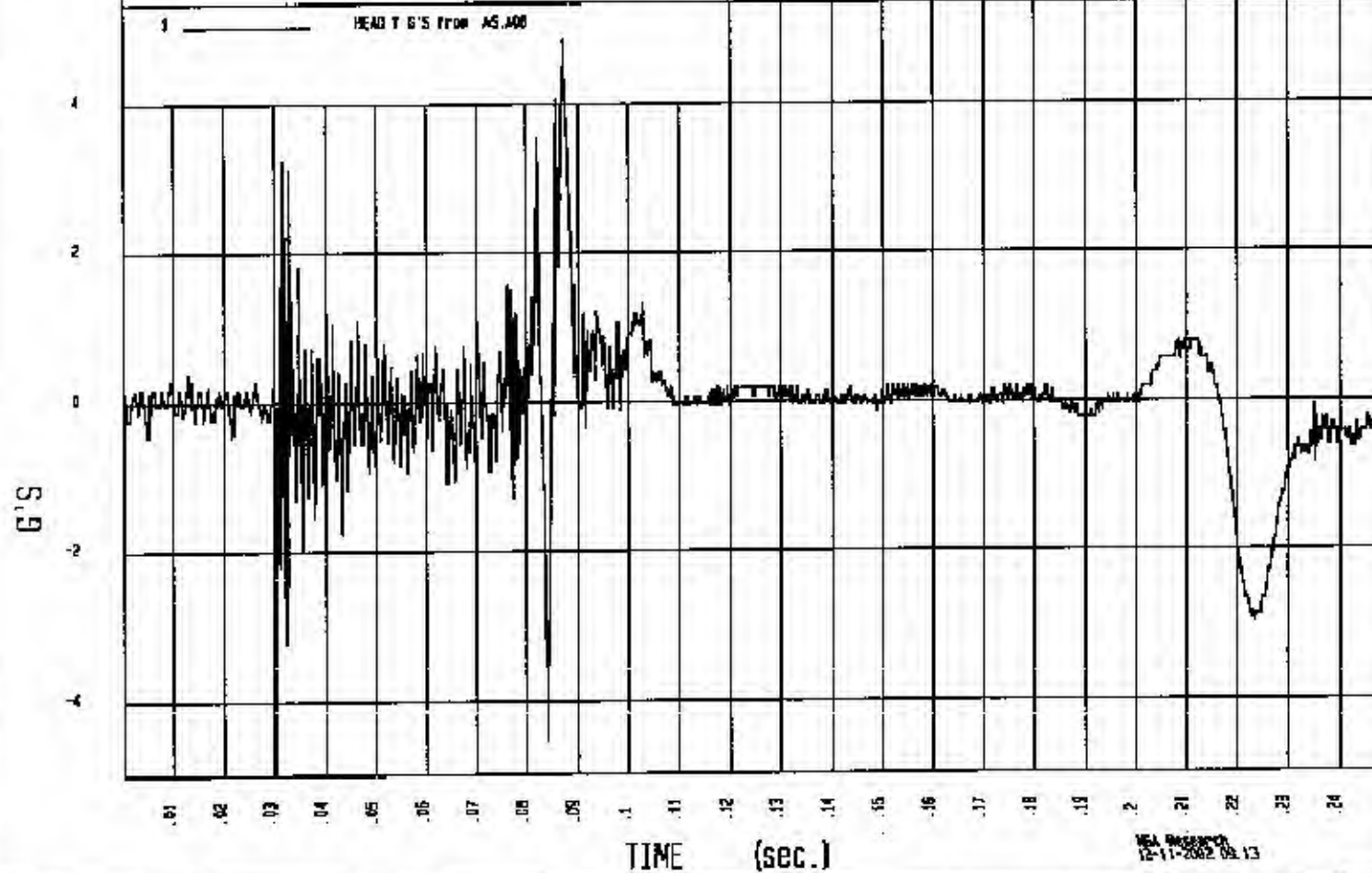
TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/11/02

COMPONENT: TEST #6 (FM2390), R/S DP1, H/V=90/6

YMIN=-4.53355 G'S at 84.0 msec

YMAX=4.856937 G'S at 87.3 msec

HEAD Y



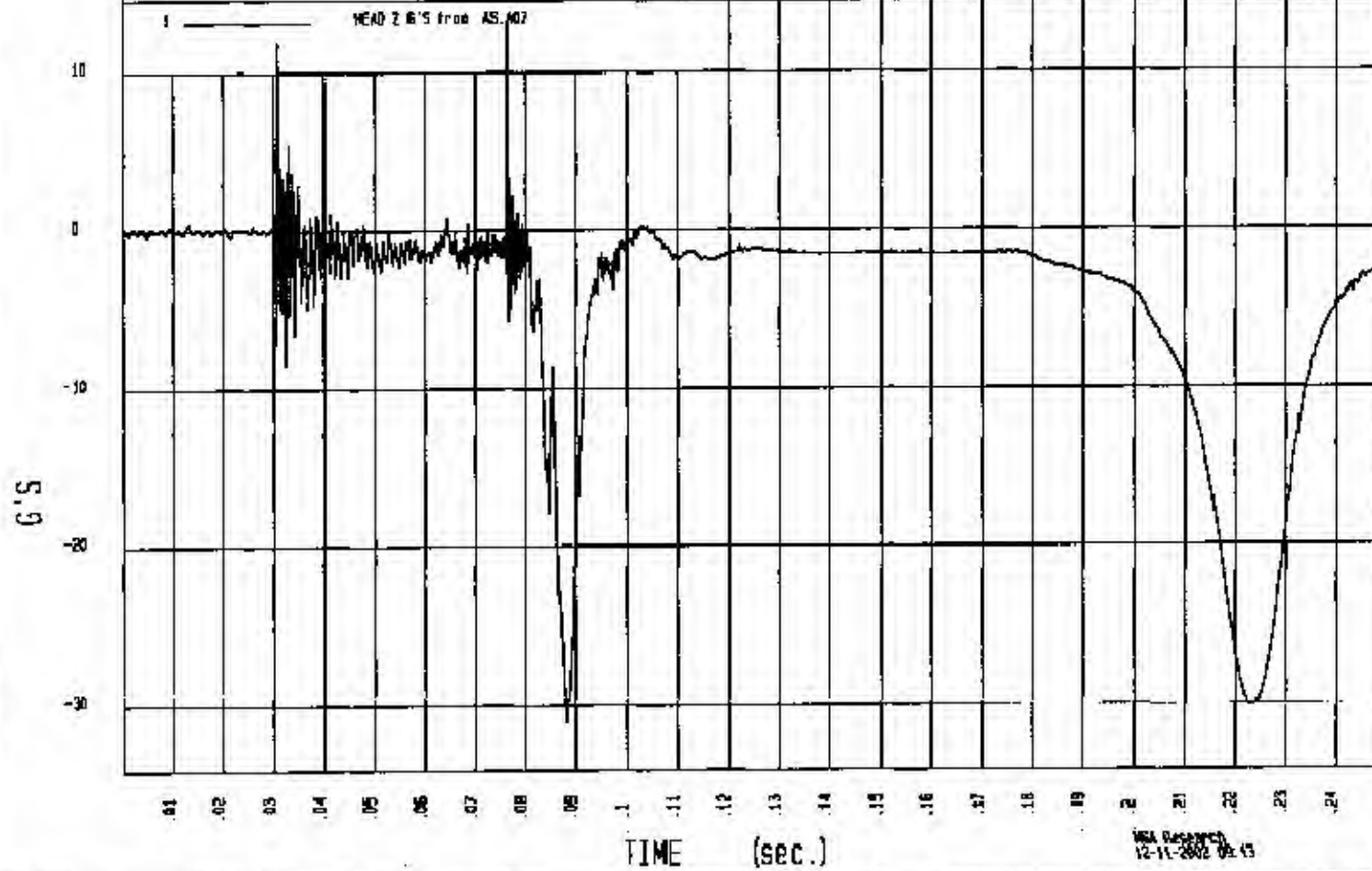
TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/11/02

COMPONENT: TEST #6 (FM2390), R/S 0P1, H/V=90/6

YMTN=30,3542/ G'S at 00.1 msec

YMU=13.2727 G'S at 75.1 msec

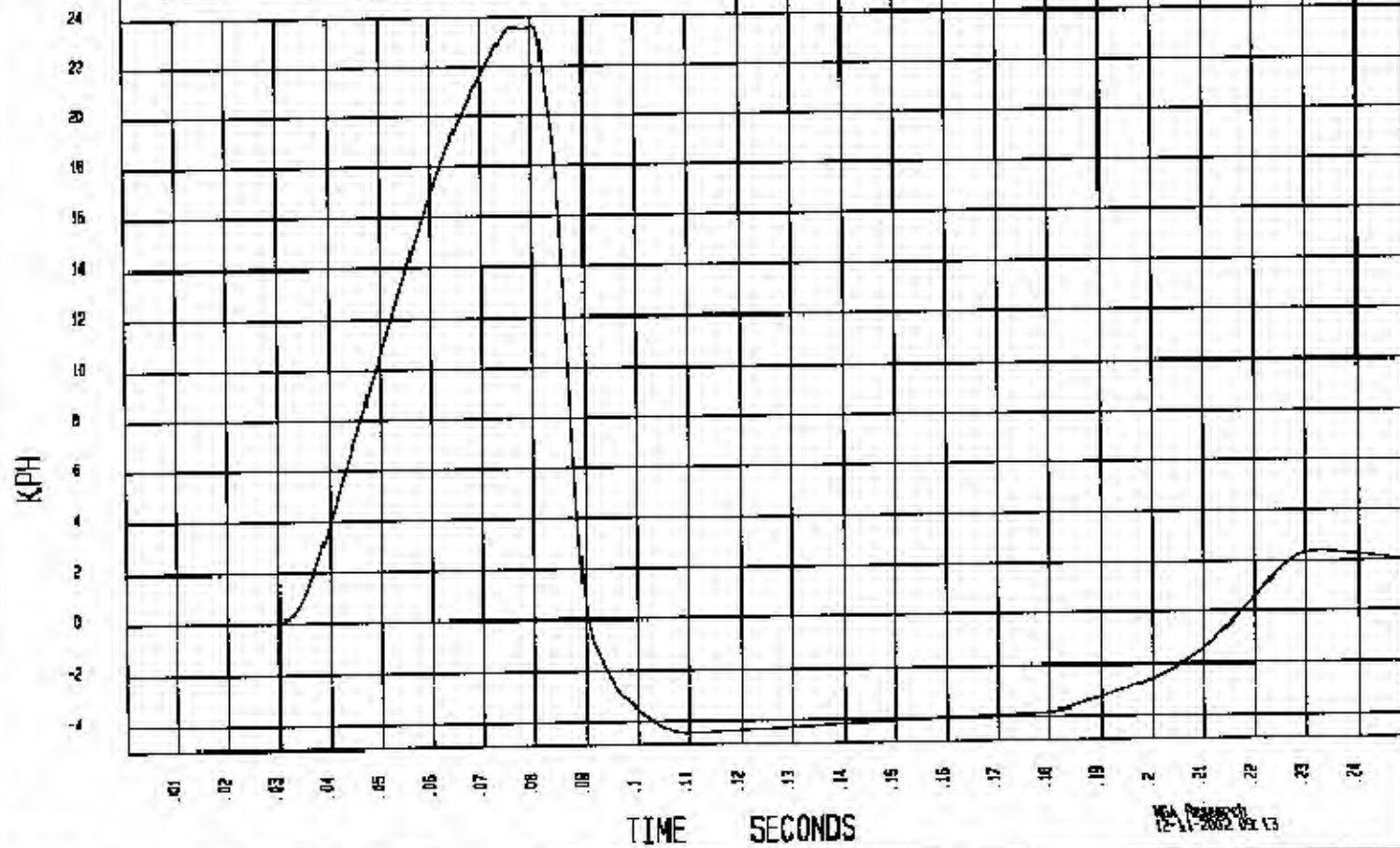
HEAD Z



TIME= 23.59269 KPH at 80.2 msec

VELOCITY

CLASS F VELOCITY MPH 1000 A1-Y05





MGA RESEARCH CORP  
EMVSS 20IU TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #8  
(EM2392)

LEFT SRI  
H/V = 270/31

PRE-TEST



MGA RESEARCH CORP  
FMVSS 201H TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #8  
(FM2392)

LEFT SR1  
NA = 270/31

POST-TEST

C3  
FM  
LS  
27



MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #8  
(FM2392)

LEFT SR1  
H/V = 270/31

POST-TEST

MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME#23

DOC. NO.: MGATP201U\_FRAME#2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC VIBE

#### GENERAL TEST PARAMETERS:

Test Number: 8

Target (Vehicle Side): Left Right FL

Temperature: 73 °F

MGA Test Reference No.: F42392

Humidity: 22 %

Approach Angles: Horizontal 270 °

Time of Test: 11:53 am

Vertical 31 °

FMH Serial No: 36

#### TEST RESULTS:

HIC(d)	HIC	$\Delta t$ (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
469	401	6.7	23.4	17	2

INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	$\Delta V$ Pre-Test	$\Delta V$ Post-Test
X	5	J351923	-100.9	1.21	1.21
Y	6	J35916	100.7	1.23	1.23
Z	7	J35910	100.6	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: [Signature] Date: 12/11/01

\* Only necessary for NHTSA (Government) Compliance testing.

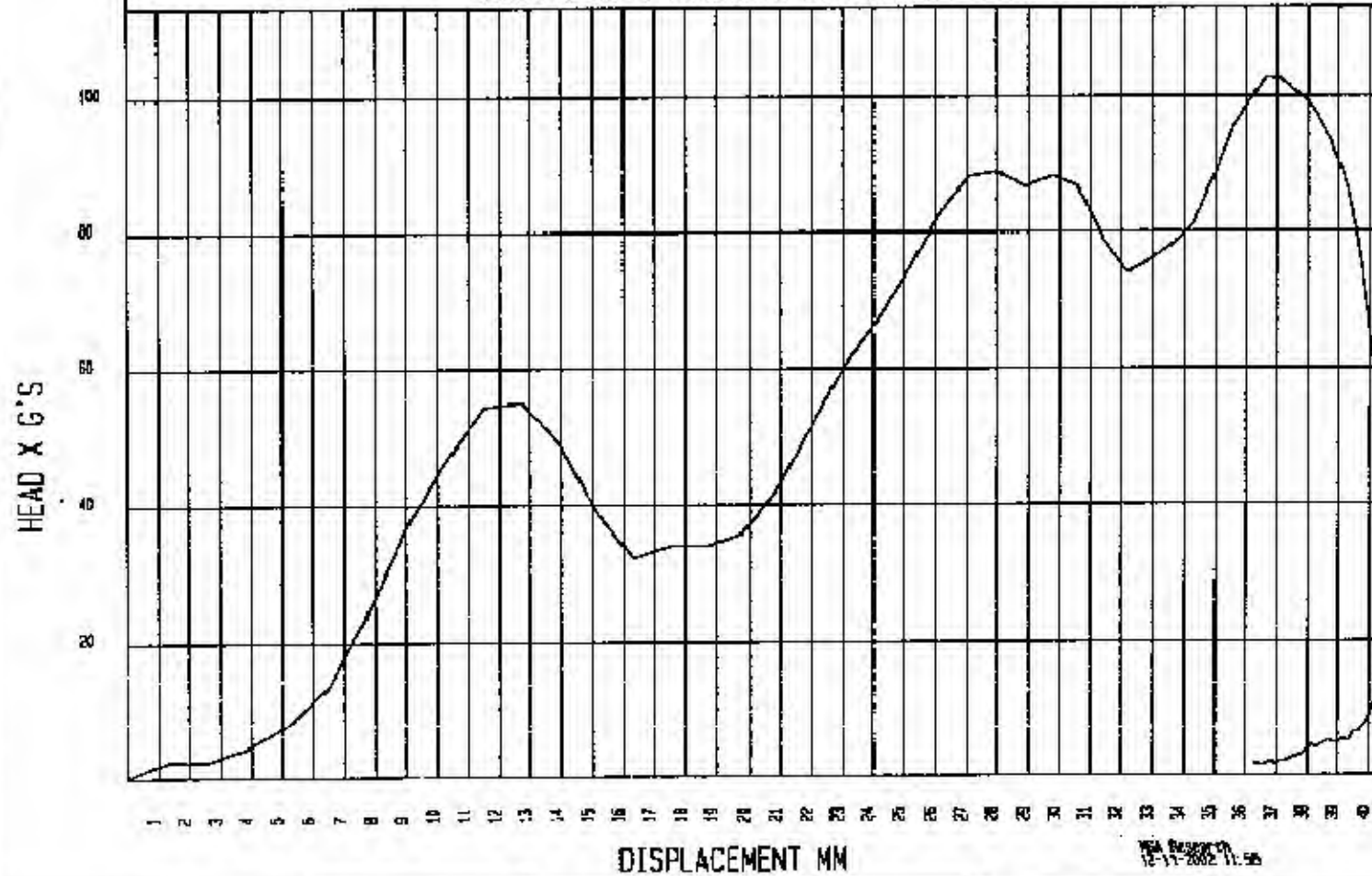
```
*****
      RESULTS OF HIC36 PROGRAM
*****
input file is \NHTSA\FM2392AV.A05
: HIC = 401.47 calculated over 6.7 msec
T1 = 3.49 msec T2 = 10.16 msec
*****
      HIC(d) = 469
      Impact Velocity = 23.6 (kph)
```



TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/11/02

COMPONENT: TEST #8 (FM2392), L/S SR1, H/V-270/31

HEAD X as a function of DISPLACEMENT



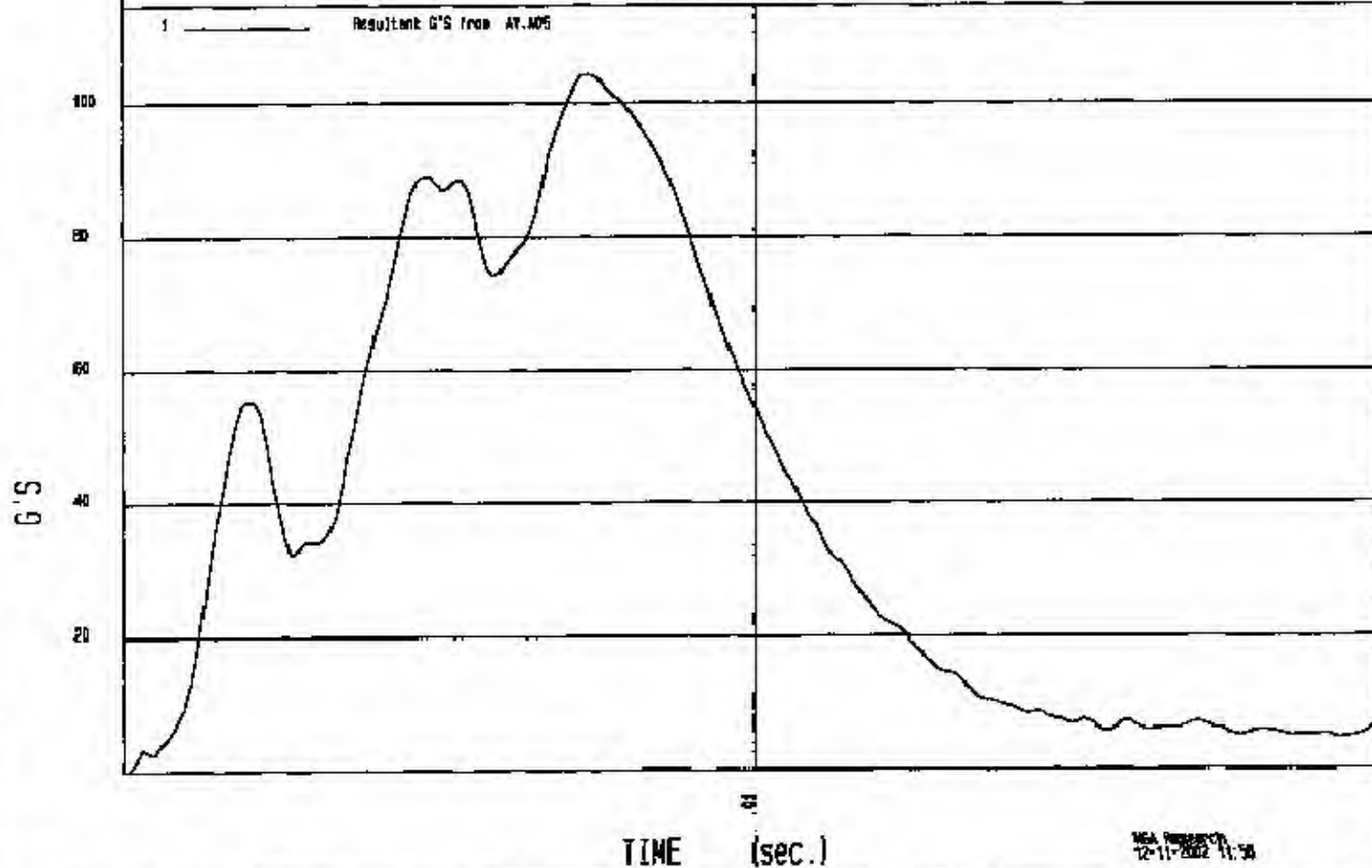
TEST: 2003 PONTIAC VIBE FMVSS 201U. 60315-001.2, 12/11/02

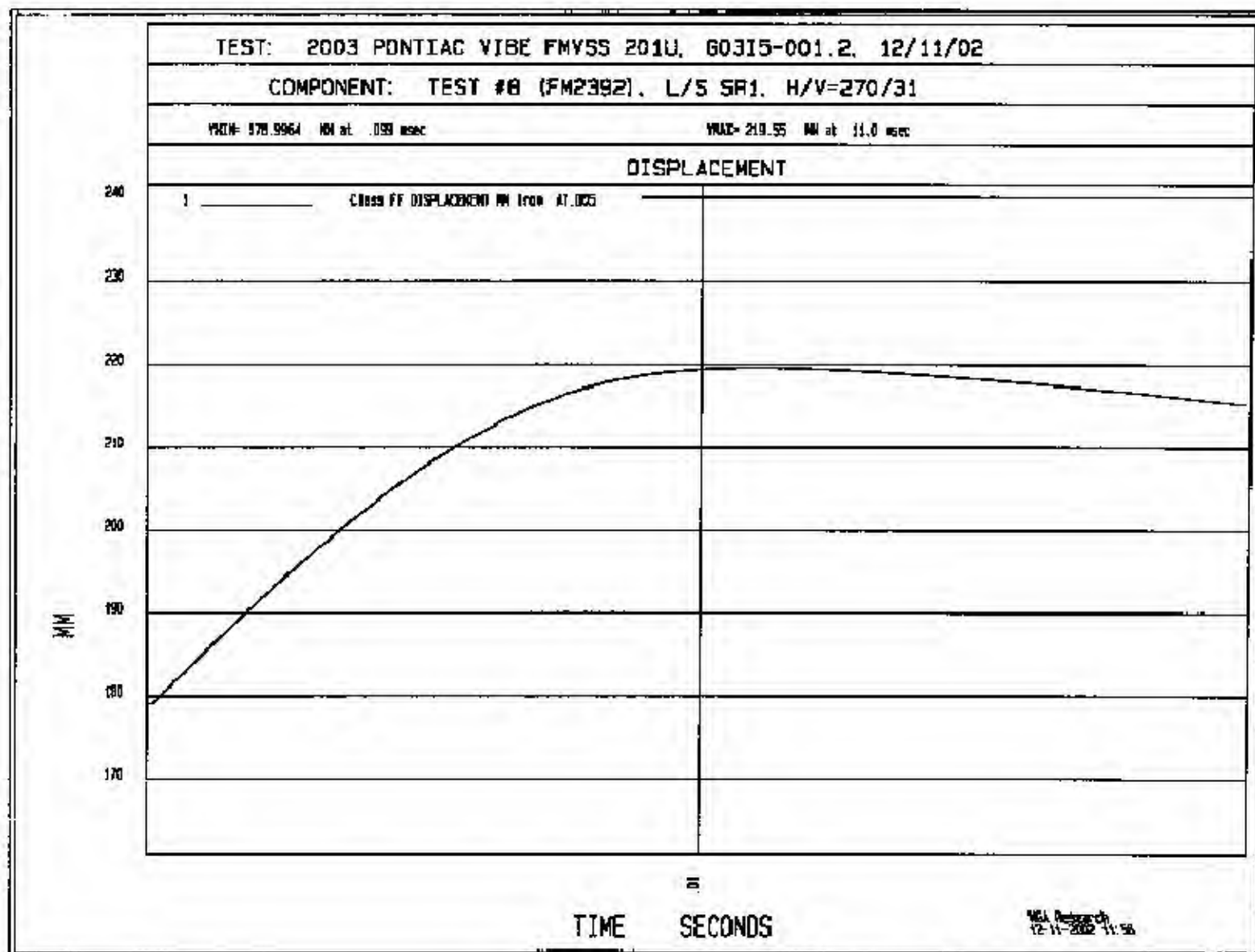
COMPONENT: TEST #8 (FM2392), L/S SR1, H/V=270/31

YMIN= .523536 G'S at 9.95 msec

YMAX= 104.2971 G'S at 7.37 msec

### FMH RESULTANT





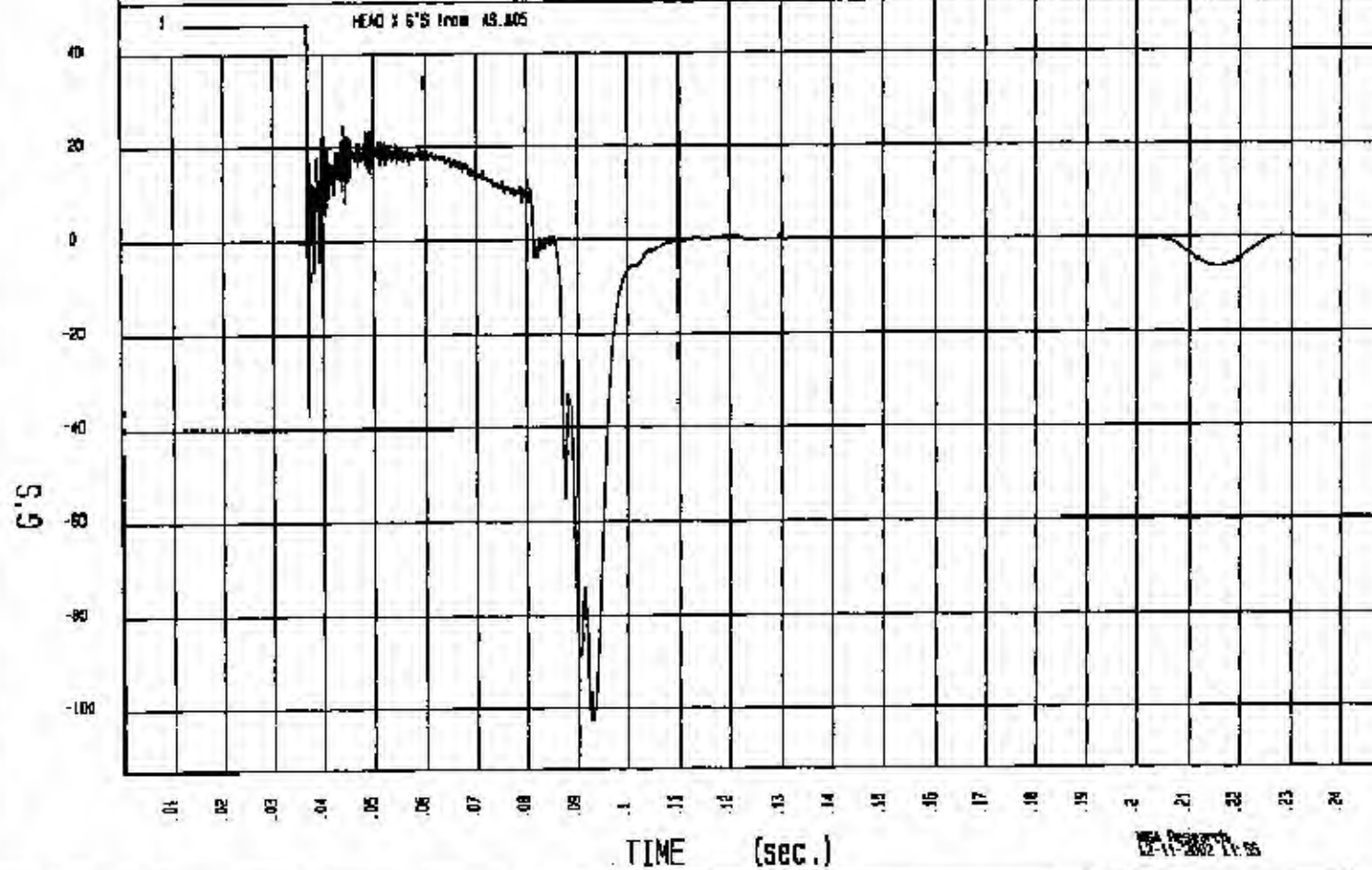
TEST: 2003 PONTIAC VIBE FMVSS 201U, G03I5-001.2, 12/11/02

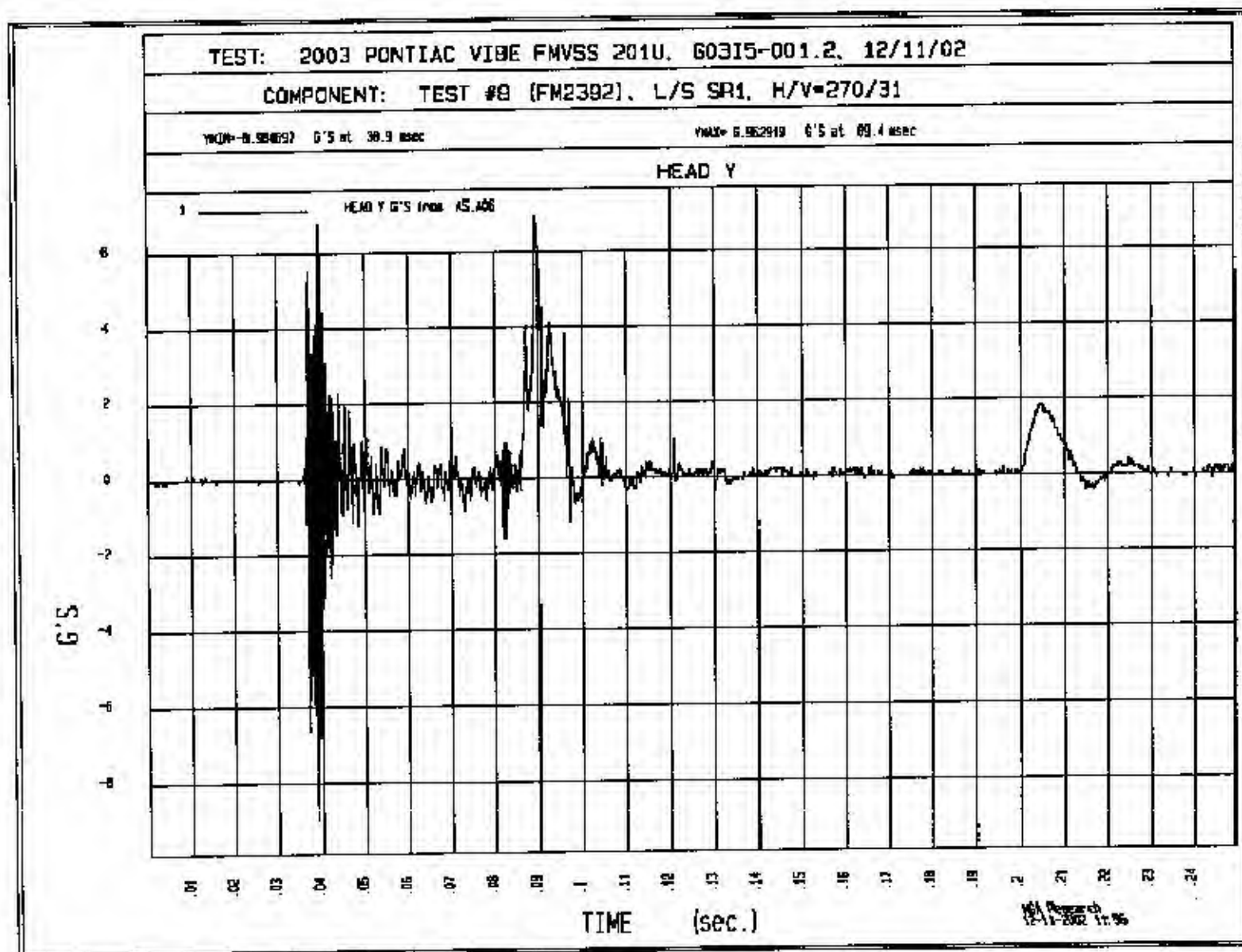
COMPONENT: TEST #8 (FM2392), L/S SH1, H/V=270/31

YMIN=-102.8236 G'S at 92.7 msec

YMAX= 46.24975 G'S at 35.6 msec

HEAD X







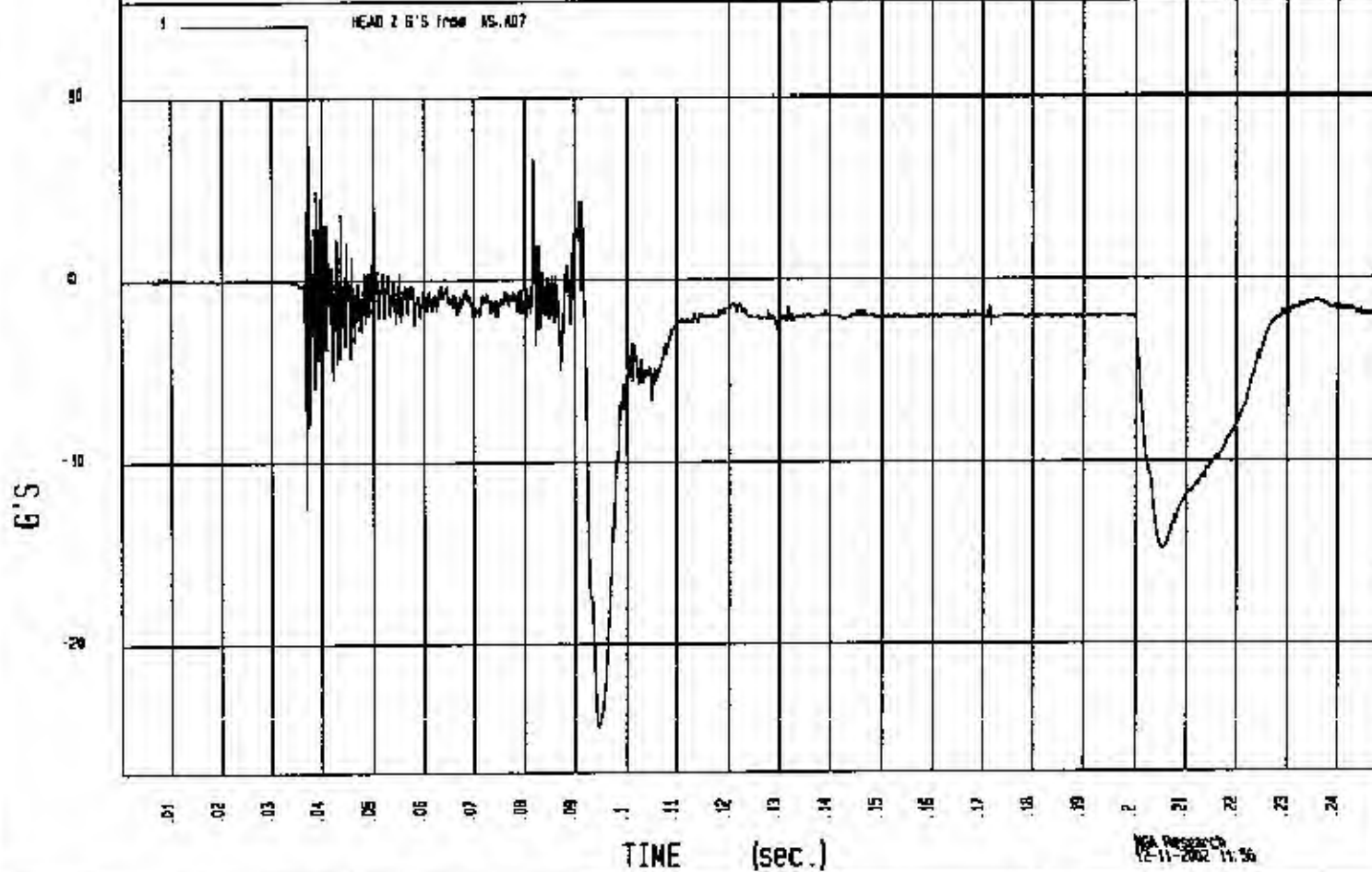
TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/11/02

COMPONENT: TEST #8 (FM2392), L/S SR1, H/V-270/31

YMIN=-24.44139 G'S at 94.7 msec

YMAX=13.61927 G'S at 37.0 msec

HEAD Z



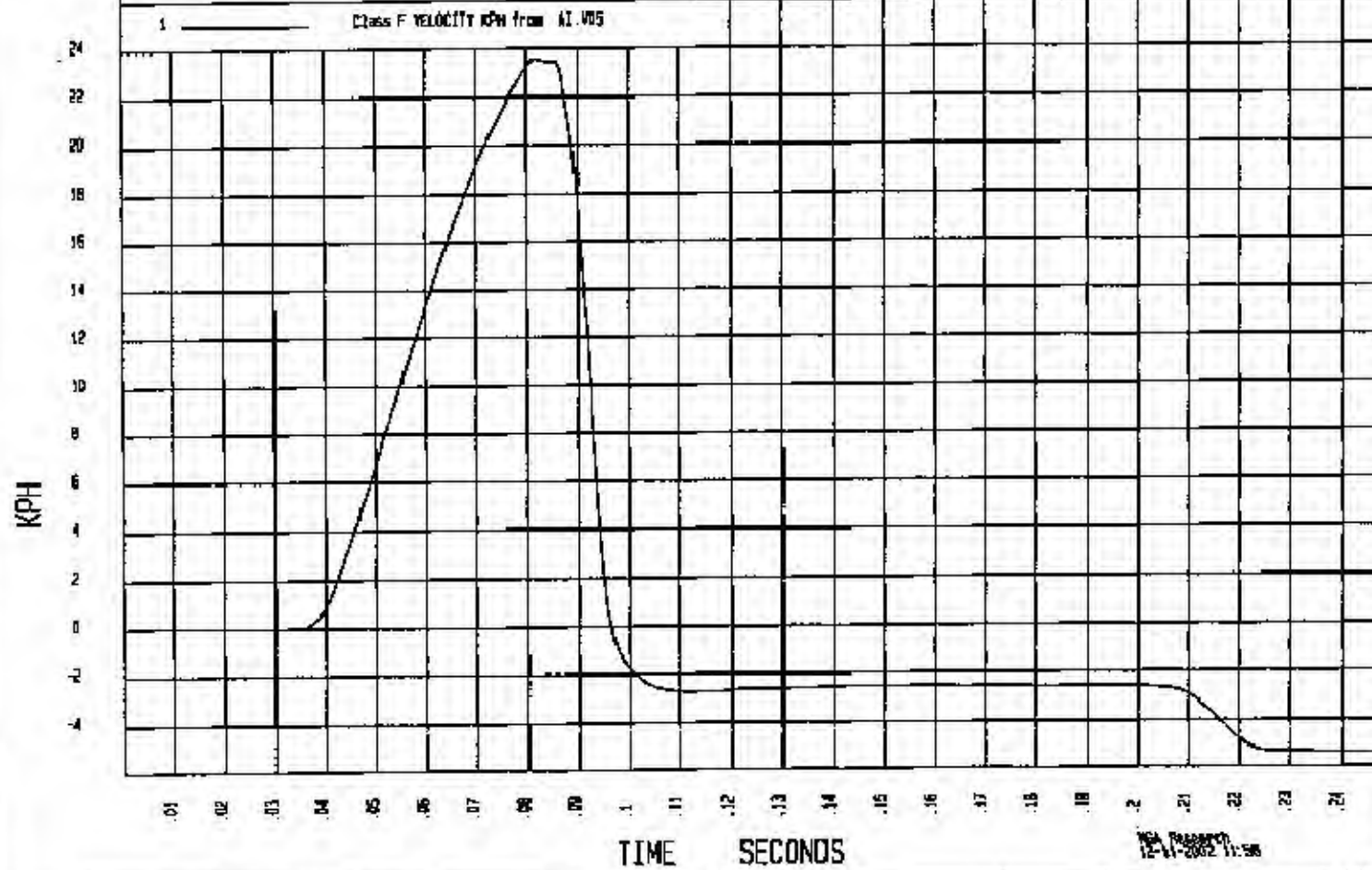
TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/11/02

COMPONENT: TEST #8 (FM2392), L/S SR1, H/V-270/31

TRIM=-5.392583 KPH at 849 rpm

YAW= 23.59494 KPH at 81.5 rpm

### VELOCITY



MCA RESEARCH CORP  
EMVSS 2010 TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #0  
(EM2393)

LEFT NR2A  
H/V = 270/33

PRE-TEST



MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #9  
(FMV2393)

LEFT SE2A  
HV - 270/33

POST-TEST

MGA RESEARCH CORP  
FMV88 20IU TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #9  
(FM2393)

LEFT SR2A  
H/V = 270/33

POST-TEST



MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME #23

DOC. NO.: MGATP201U\_FRAME #2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30105 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC VIBE

#### GENERAL TEST PARAMETERS:

Test Number: 9

Target (Vehicle Side) Left Right SL2A

Temperature: 73 CEDC

MGA Test Reference No.: FM2393

Humidity: 72 %

Approach Angles: Horizontal 270 °

Time of Test: 12:13 am/pm

Vertical 33 °

FMH Serial No: 38

#### TEST RESULTS:

HIC(d)	HIC	$\Delta t$ (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
578	546	7.4	23.8	10	2

#### INSTRUMENTAION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axle	Channel	Serial No.	DLR Value	$\Delta V$ Pre-Test	$\Delta V$ Post-Test
X	5	J36197	-108.2	1.21	1.21
Y	6	J36193	102.0	1.23	1.23
Z	7	J36353	97.8	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By\*: [Signature] Date: 10/18/01

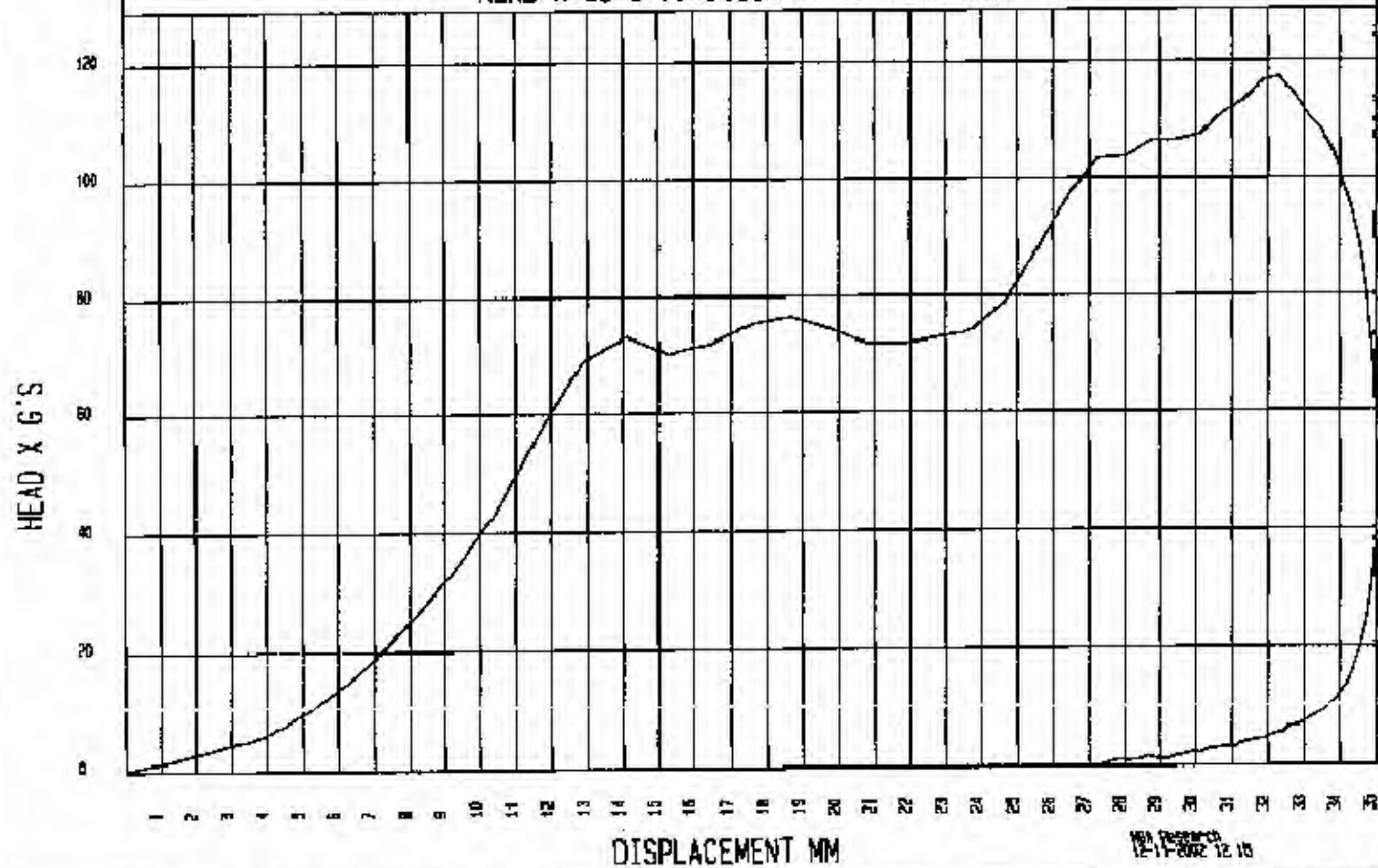
\*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM2393AV.A05
The HIC = 546.12 calculated over 7.4 msec
T1 = 1.69 msec T2 = 9.06 msec
*****
HIC(d) = 578
Impact Velocity = 23.8 (kph)
```

TEST: 2003 PONTIAC VIBE FMVSS 201U, G0315-001.2, 12/11/02

COMPONENT: TEST #9 (FM2393), L/S SR2A, H/V=270/33

HEAD X as a function of DISPLACEMENT



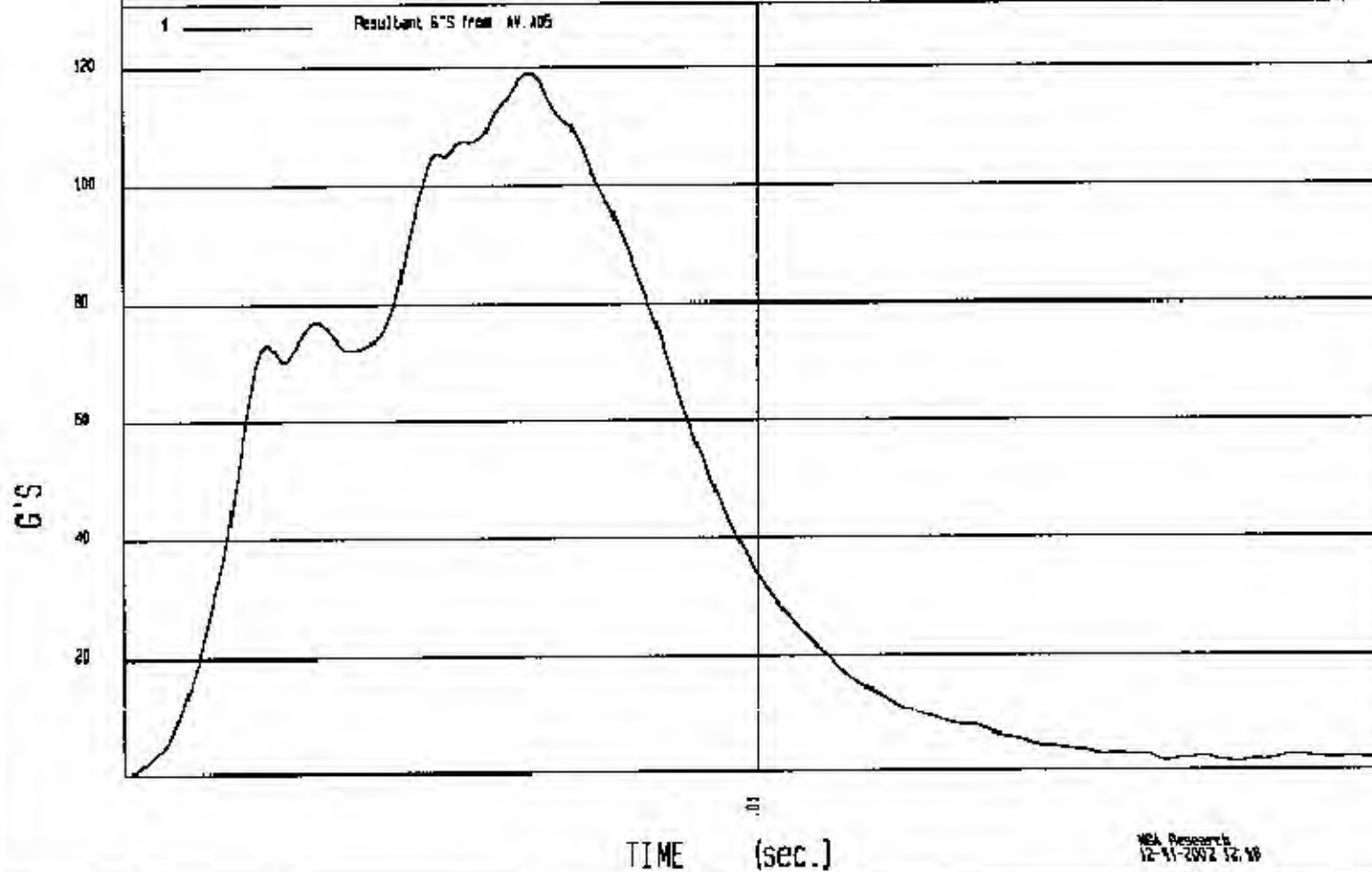
TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/11/02

COMPONENT: TEST #9 (FM2393), L/S SR2A, H/V=270/33

MIN= .7187144 G'S at 9.95 msec

MAX= 118.825 G'S at 5.47 msec

### FMH RESULTANT





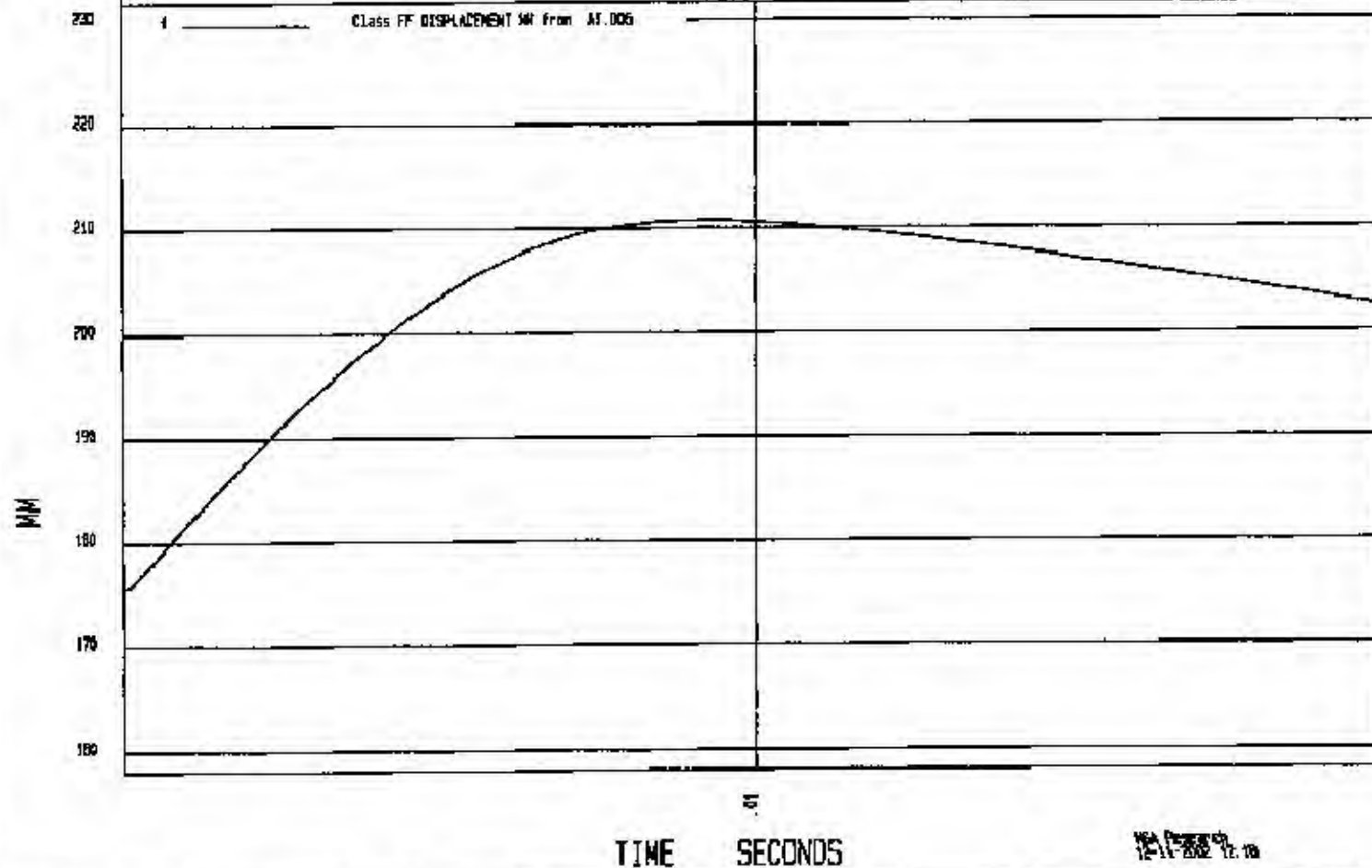
TEST: 2003 PONTIAC VIBE FMVSS 201U, G03I5-001.2, 12/11/02

COMPONENT: TEST #9 (FM2393), L/S SR2A, H/V=270/33

YMIN= 175.5577 MM at .095 msec

YMAX= 210.5942 MM at 9.15 msec

### DISPLACEMENT

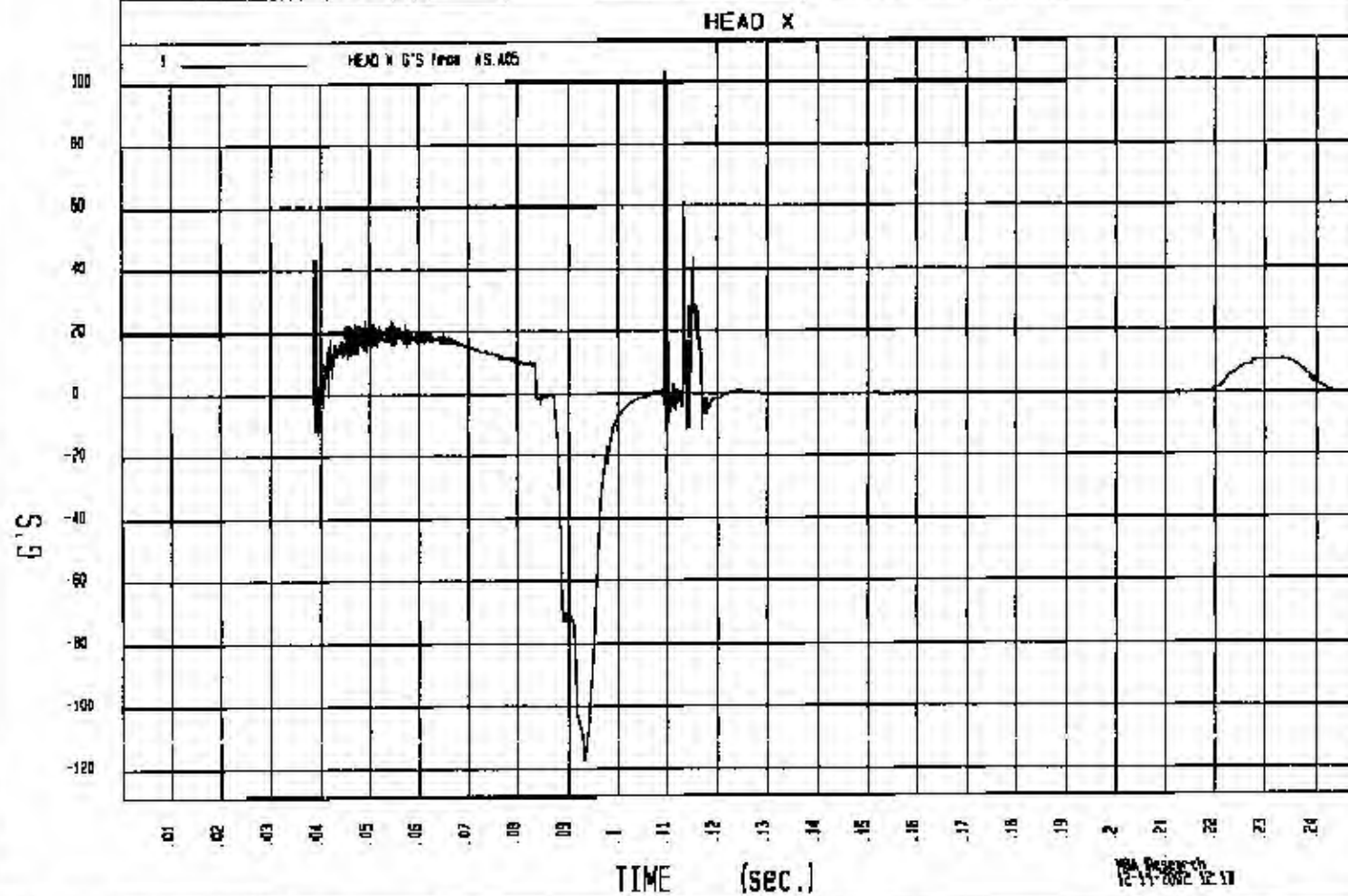


TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/11/02

COMPONENT: TEST #9 (FM2393), L/S SR2A, H/V=270/33

YMAX=117.2985 G'S at 93.3 msec

YMAX=102.9444 G'S at 109. msec

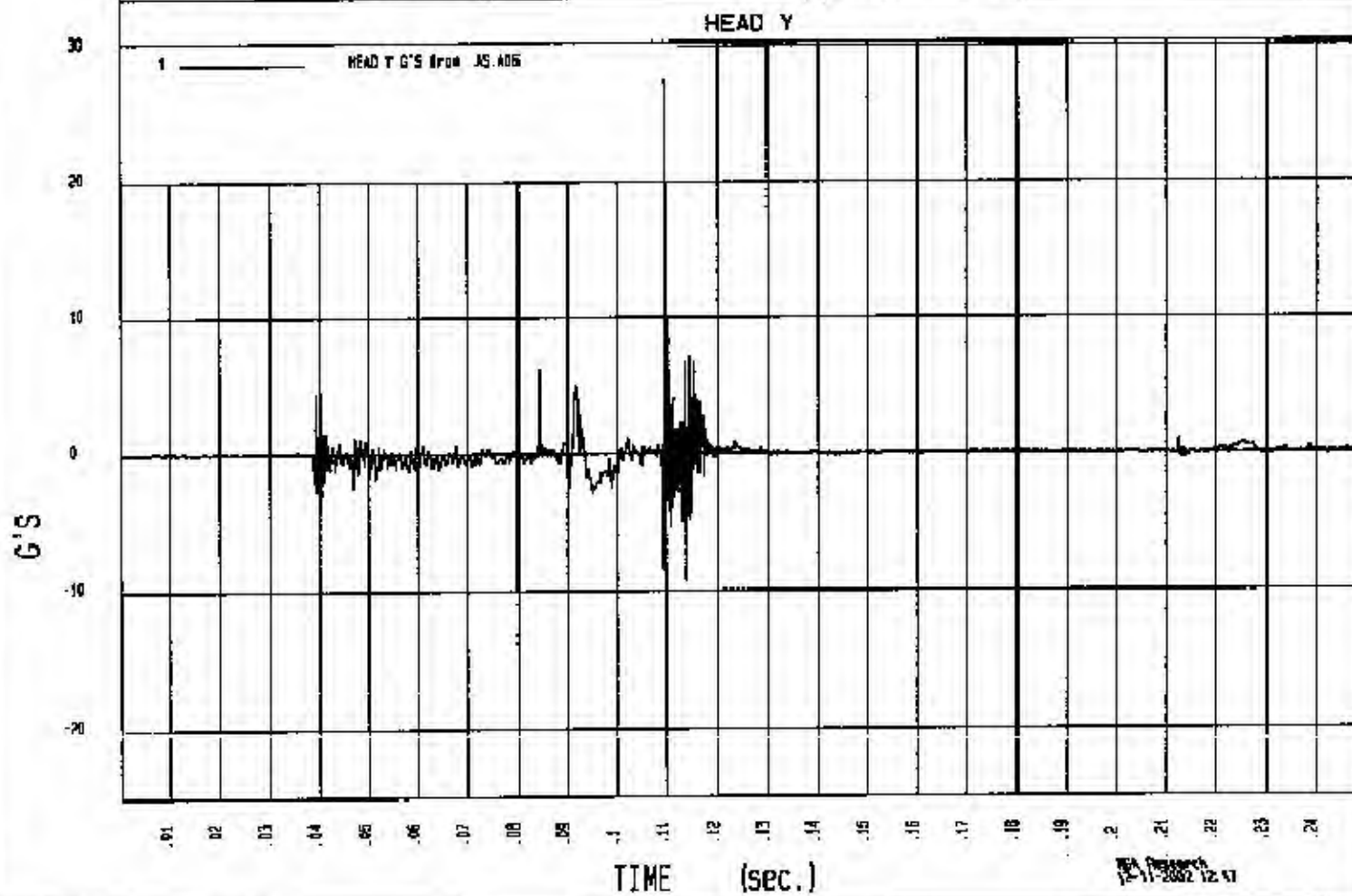


TEST: 2003 PONTIAC VIBE FMVSS 201U, 603I5-001.2, 12/11/02

COMPONENT: TEST #9 (FM2393), L/S SR2A, H/V=270/33

YMIN=-22.782 G'S at 109. msec

YMAX= 27.51444 G'S at 109. msec



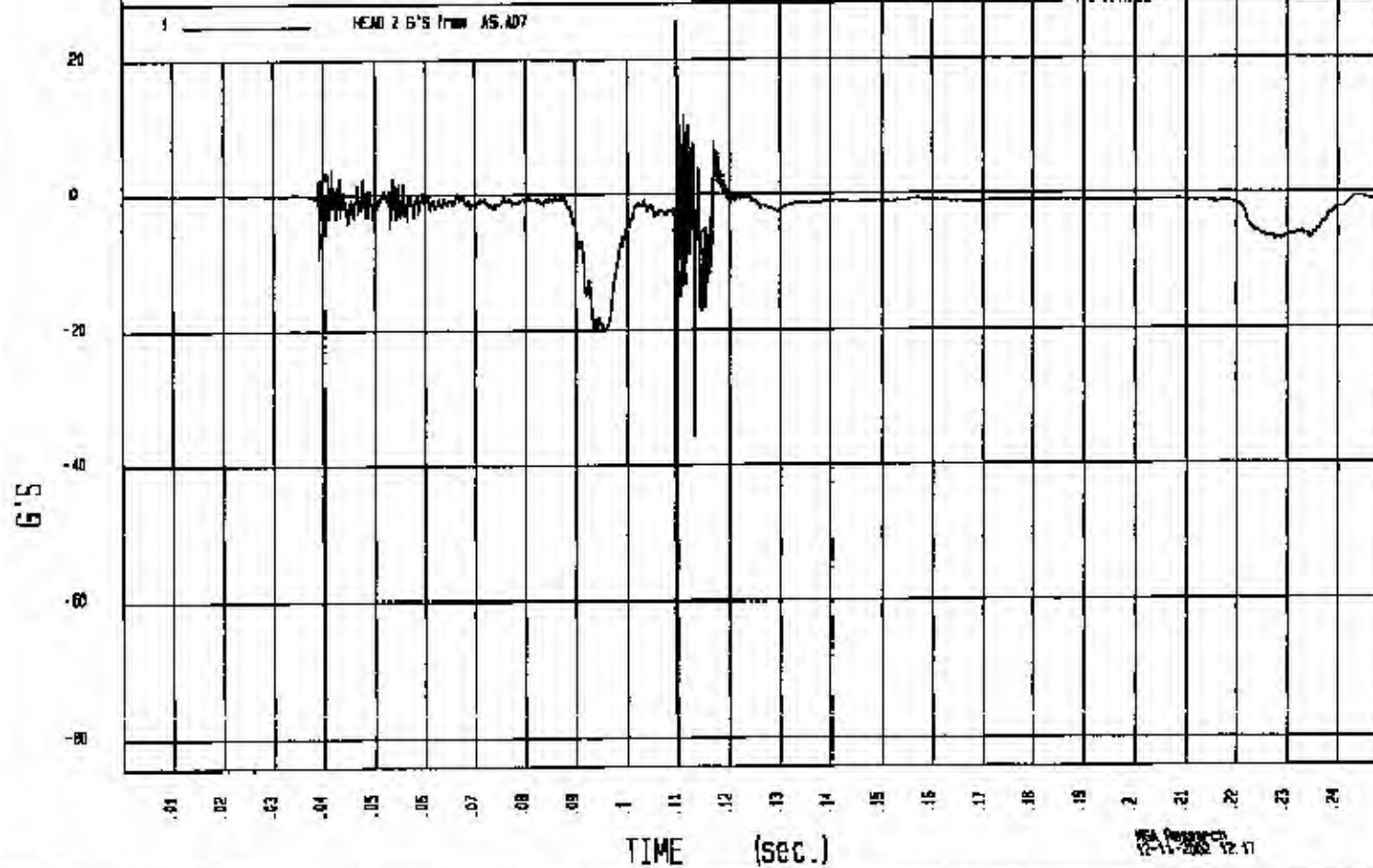
TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/11/02

COMPONENT: TEST #9 (FM2393), L/S SR2A, H/V=270/33

YMIN=-76.743 G'S at 109. msec

YMAX= 25.68461 G'S at 109. msec

HEAD Z



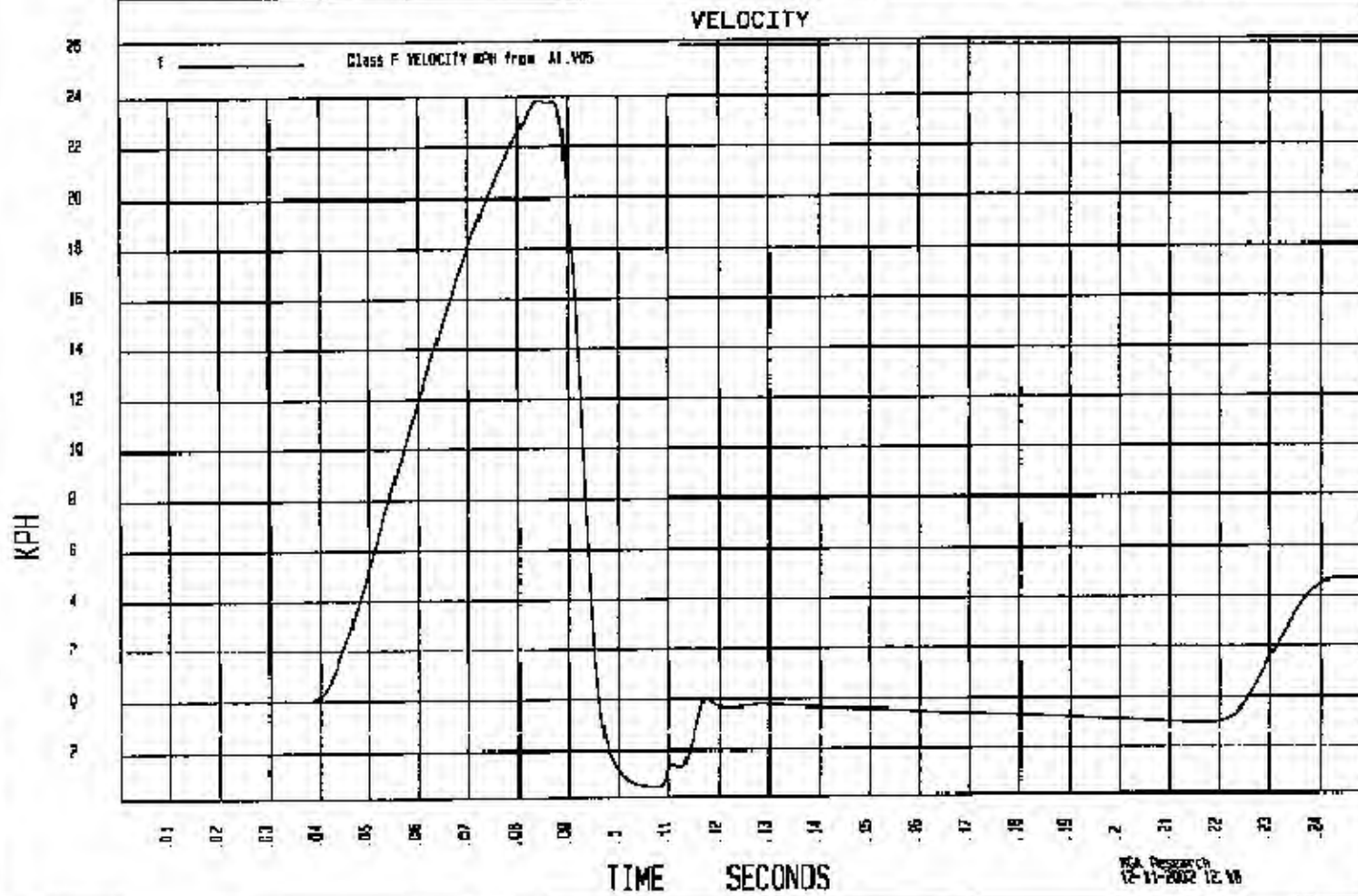


TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/11/02

COMPONENT: TEST #9 (FM2393), L/S SR2A, H/V=270/33

YMIN=-3.478337 KPH at 107.9 msec

YMAX= 23.83826 KPH at 83.9 msec



MCA RESEARCH CORP  
FIVENS 200U TESTING  
2703 PONTIAC VIBE

C30105

12/11/02

TEST #10  
(FM2394)

LEFT LR2  
HV = 270/34

PRE-TEST



MCA RESEARCH CORP  
PROCESS 2000 TESTING  
2003 PONTIAC VIBE

030105

12/11/02

TEST #10

(1512094)

LEFT UR2

RAN = 270/34

POST-TEST

MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/11/02

TEST #10  
(FM2394)

LEFT UR2  
H/V = 170/34

POST-TEST



MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME#2.3

DOC. NO.: MGATP201U\_FRAME#2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30103 VEHICLE YR/MAKE/MODEL: 2003 PONTIAC VIBE

#### GENERAL TEST PARAMETERS:

Test Number: 10

Target (Vehicle Side) Left UR 2

Temperature: 73 °C

MGA Test Reference No.: FM2394

Humidity: 22 %

Approach Angles: Horizontal 270 °

Time of Test: 2:13 am/pm

Vertical 34 °

FMH Serial No: 35

#### TEST RESULTS:

HIC(d)	HIC	$\Delta t$ (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. D	Left/Right PL D
<u>491</u>	<u>431</u>	<u>11.2</u>	<u>23.7</u>	<u>48</u>	<u>1</u>

#### INSTRUMENTATION INFORMATION: (all accelerometers are Endevco 7264-2000)

Axis	Channel	Serial No.	DLR Value	$\Delta V$ Pre-Test	$\Delta V$ Post-Test
<u>X</u>	<u>5</u>	<u>T35924</u>	<u>-93.1</u>	<u>1.21</u>	<u>1.21</u>
<u>Y</u>	<u>6</u>	<u>T35919</u>	<u>95.3</u>	<u>1.23</u>	<u>1.23</u>
<u>Z</u>	<u>7</u>	<u>T31031</u>	<u>95.1</u>	<u>1.51</u>	<u>1.51</u>

REMARKS (Summary of test, damage, non-compliance, invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By: [Signature] Date: 12/11/02

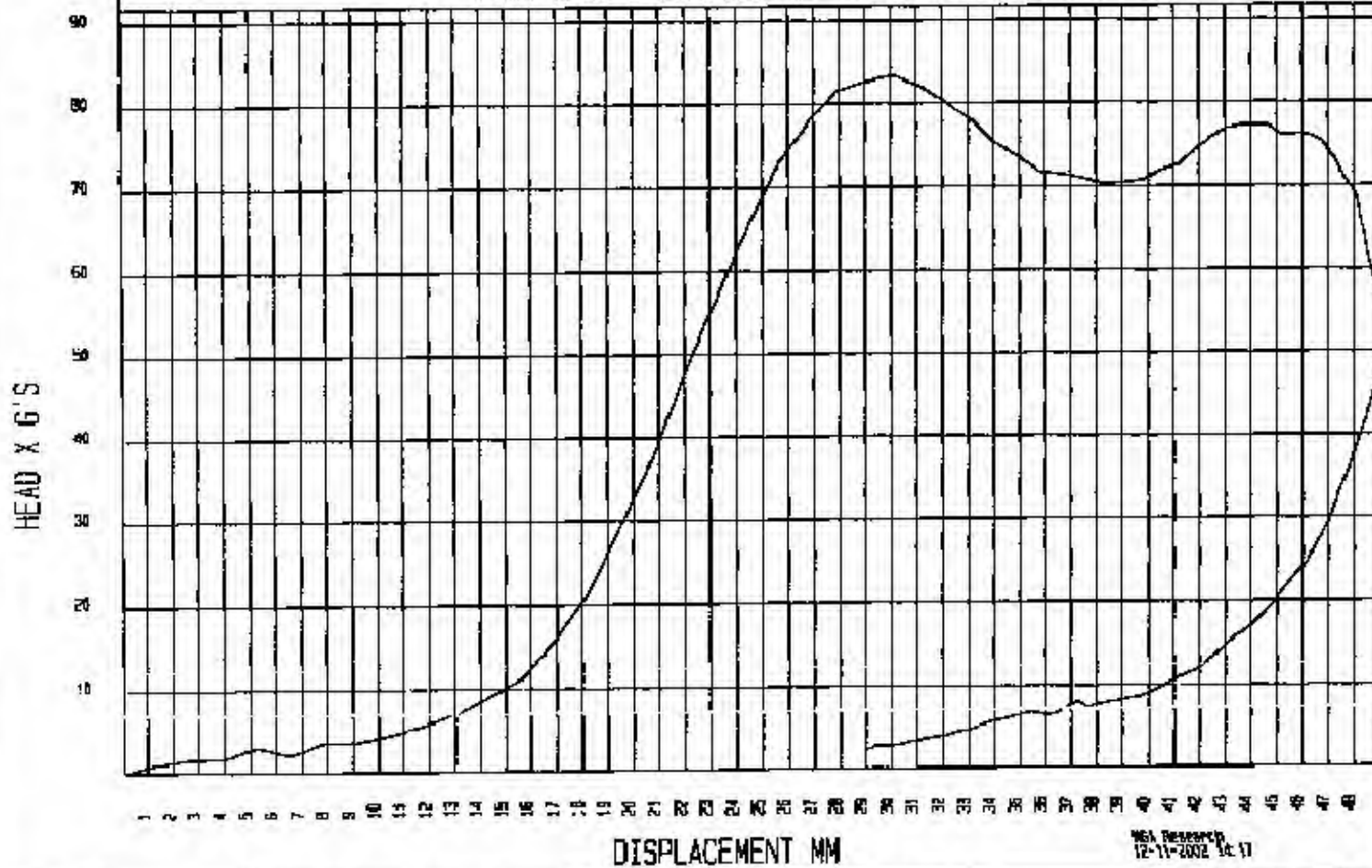
\*Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM2394AV.A05
e HIC = 430.51 calculated over 11.2 msec
T1 = 3.19 msec T2 = 14.34 msec
*****
HIC(d) = 491
Impact Velocity = 23.7 (kph)
```

TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/11/02

COMPONENT: TEST #10 (FM2394), L/S UR2, R/V=270/34

HEAD X as a function of DISPLACEMENT



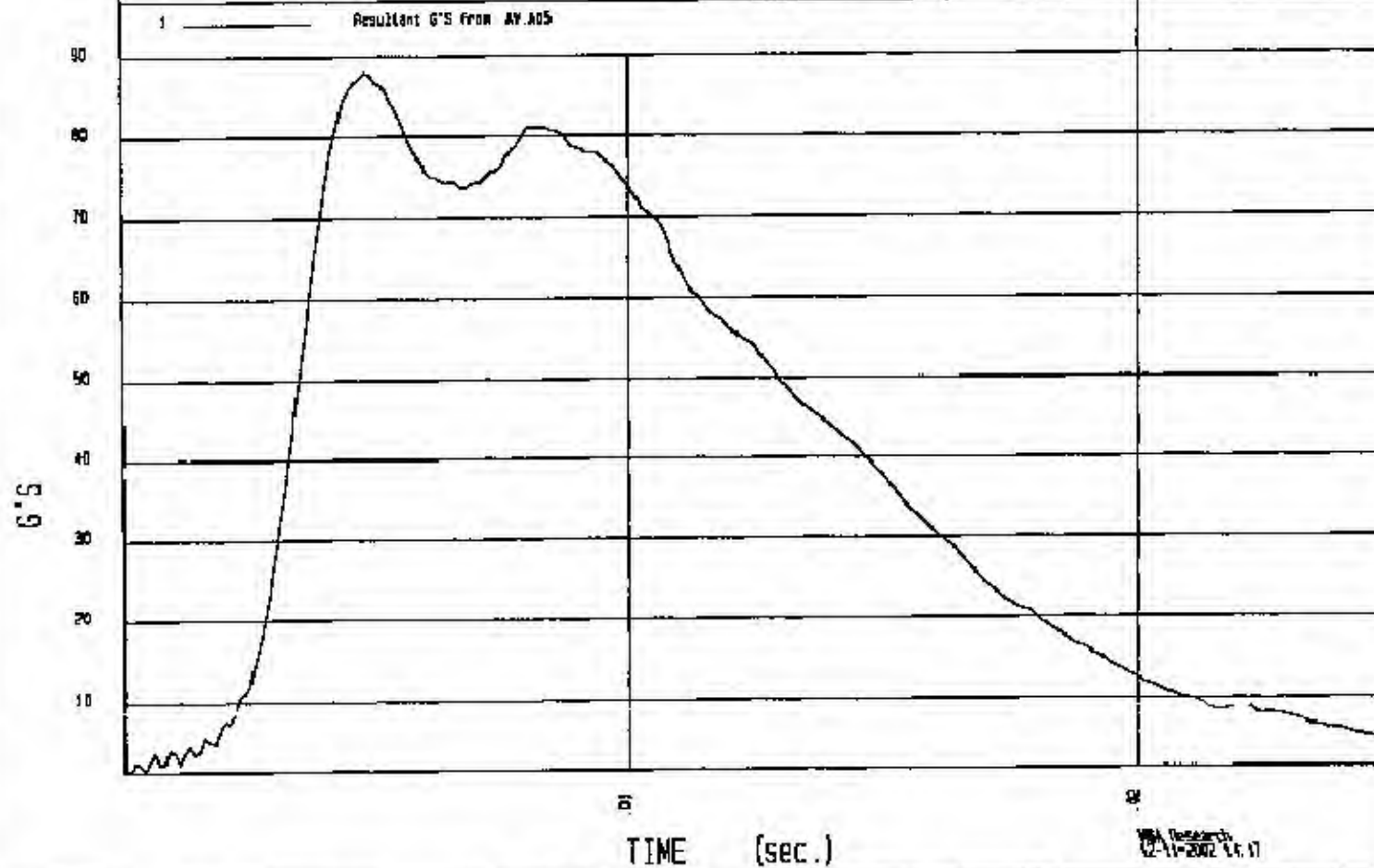
TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/11/02

COMPONENT: TEST #10 (FM2394), L/S UR2, H/V=270/34

MIN= 1.00983 G'S at 9.09 msec

MAX= 88.03867 G'S at 4.78 msec

### FMH RESULTANT





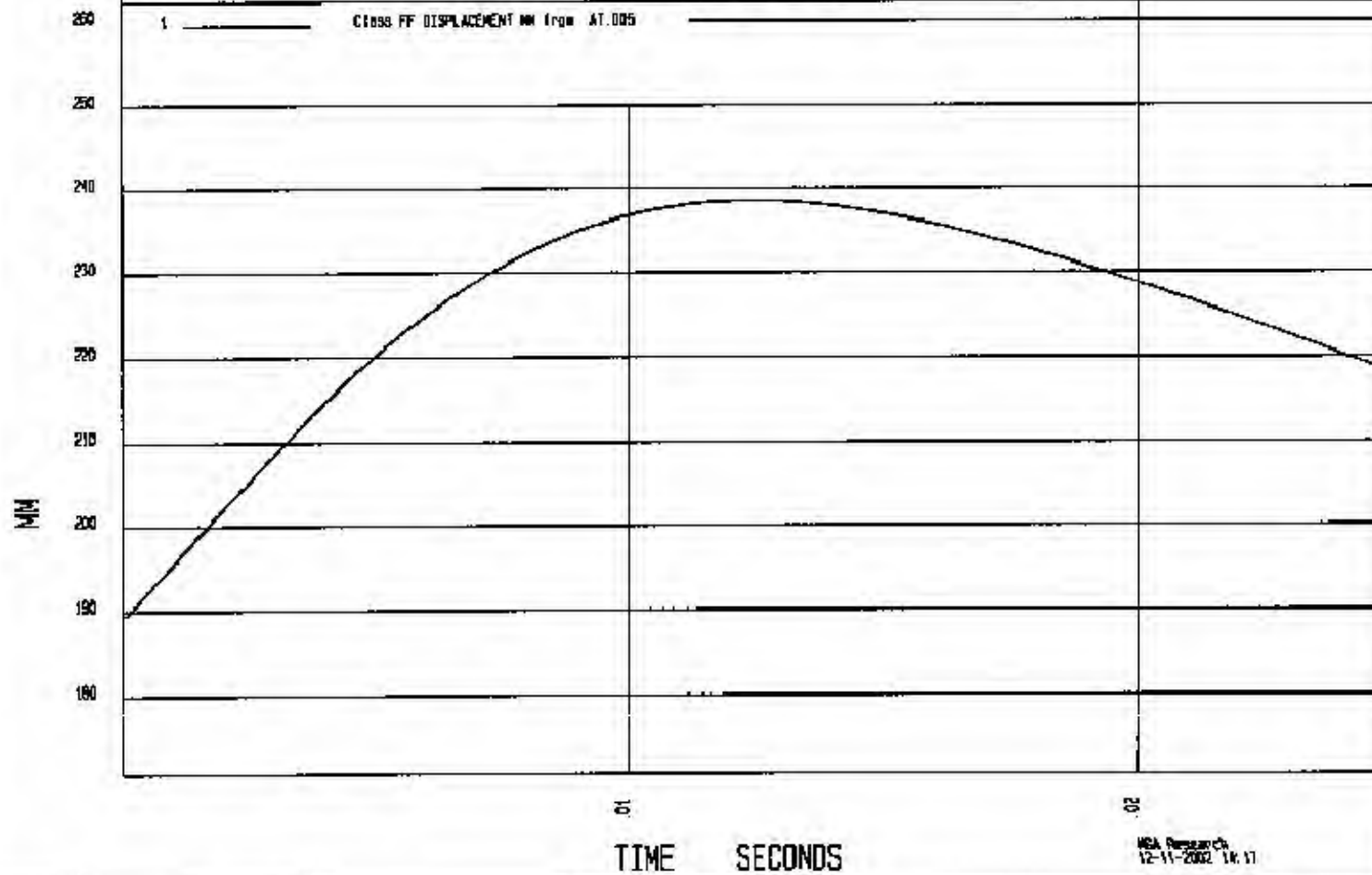
TEST: 2003 PONTIAC VIBE FMVSS 201U, G0315-001.2, 12/11/02

COMPONENT: TEST #10 (FM2394), L/S UR2, H/Y=270/34

MIN= 180.4453 MM at .000 msec

MAX= 238.44 MM at 12.4 msec

### DISPLACEMENT



TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/11/02

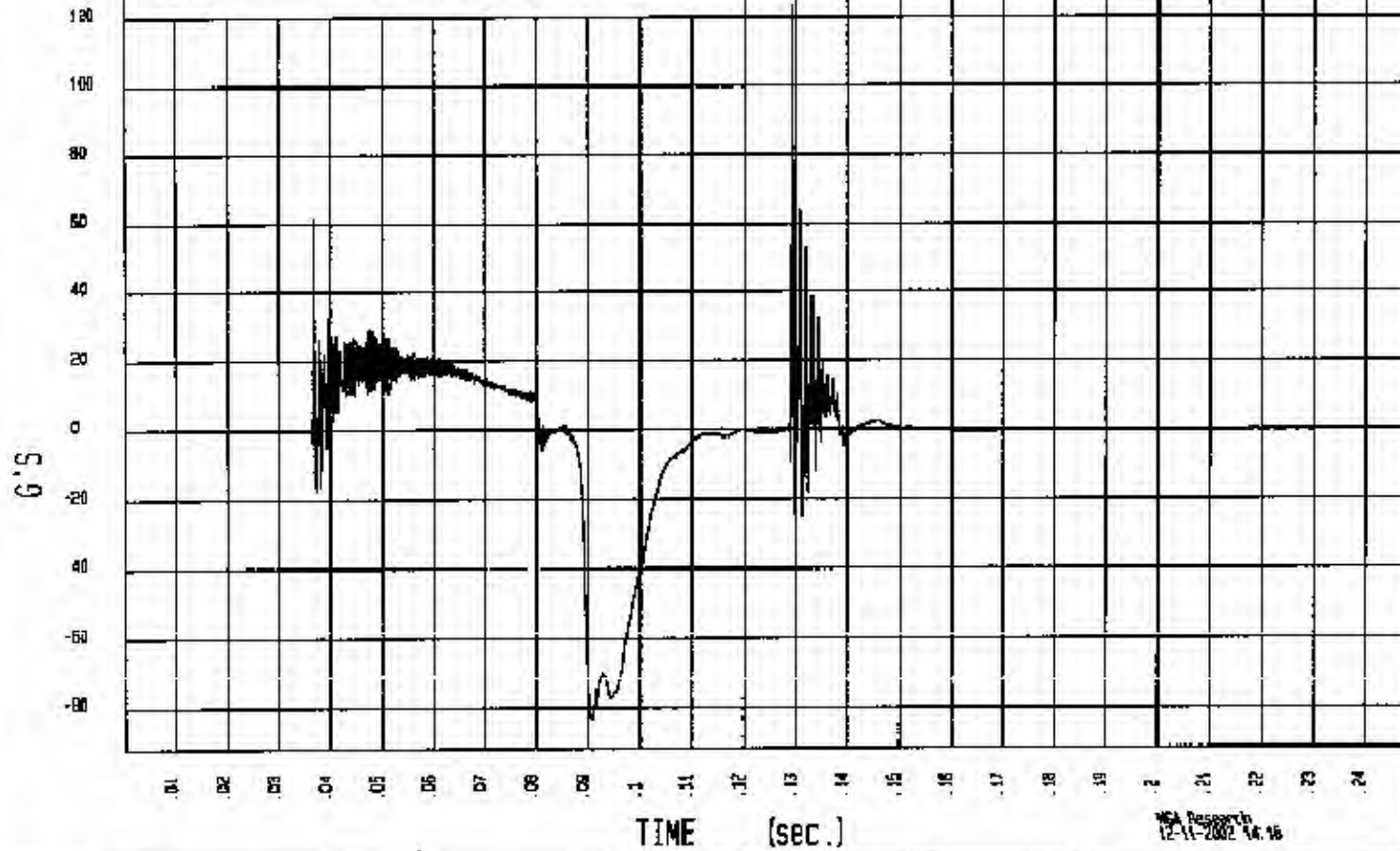
COMPONENT: TEST #10 (FM2394), L/S UR2, H/V=270/34

YMIN=-83.42211 G'S at 90.7 msec

YMAX=123.7553 G'S at 129. msec

HEAD X

1 HEAD X G'S from 45.405



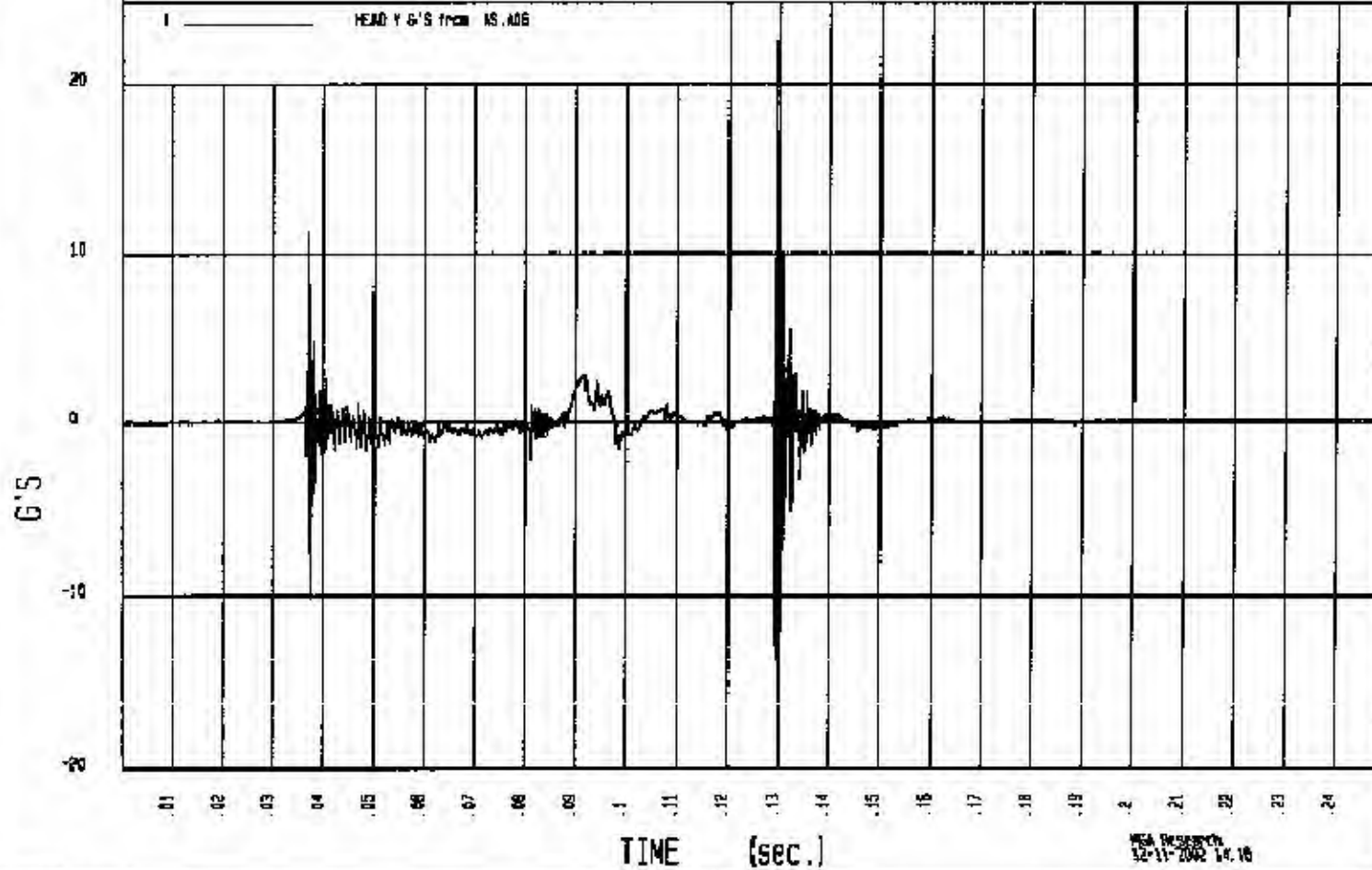
TEST: 2003 PONTIAC VIBE FMVSS 201U, G03I5-001.2, 12/11/02

COMPONENT: TEST #10 (FM2394), L/S UR2, H/V=270/34

YMIN=-16.19325 G'S at 129. msec

YMAX=22.50900 G'S at 129. msec

HEAD Y



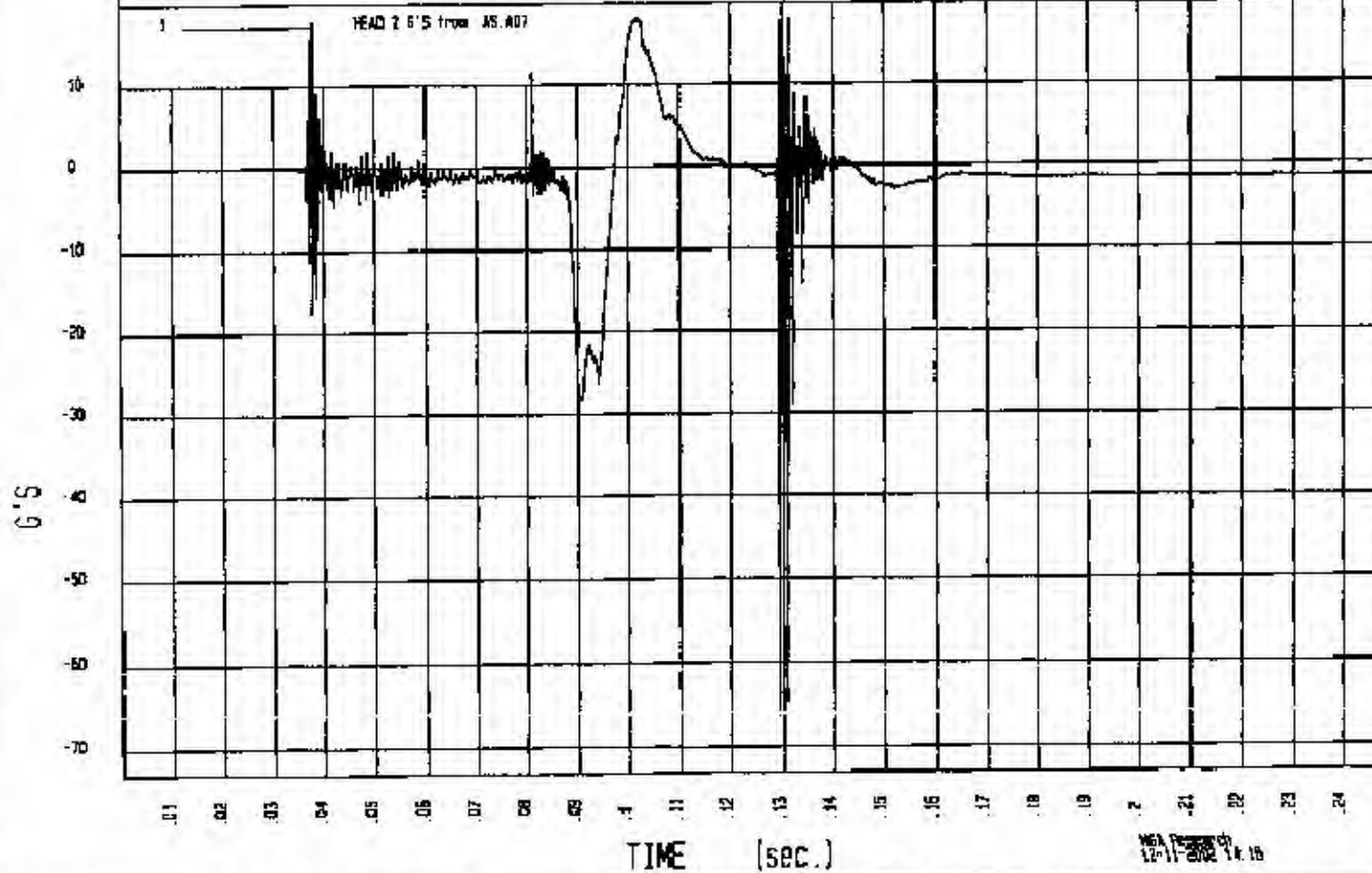
TEST: 2003 PONTIAC VIBE FMVSS 201U, G0315-001.2, 12/11/02

COMPONENT: TEST #10 (FM2394), L/S UR2, H/V=270/34

YMIN=-66.3854 G'S at 129. msec

YMAX= 17.84715 G'S at 101. msec

HEAD Z





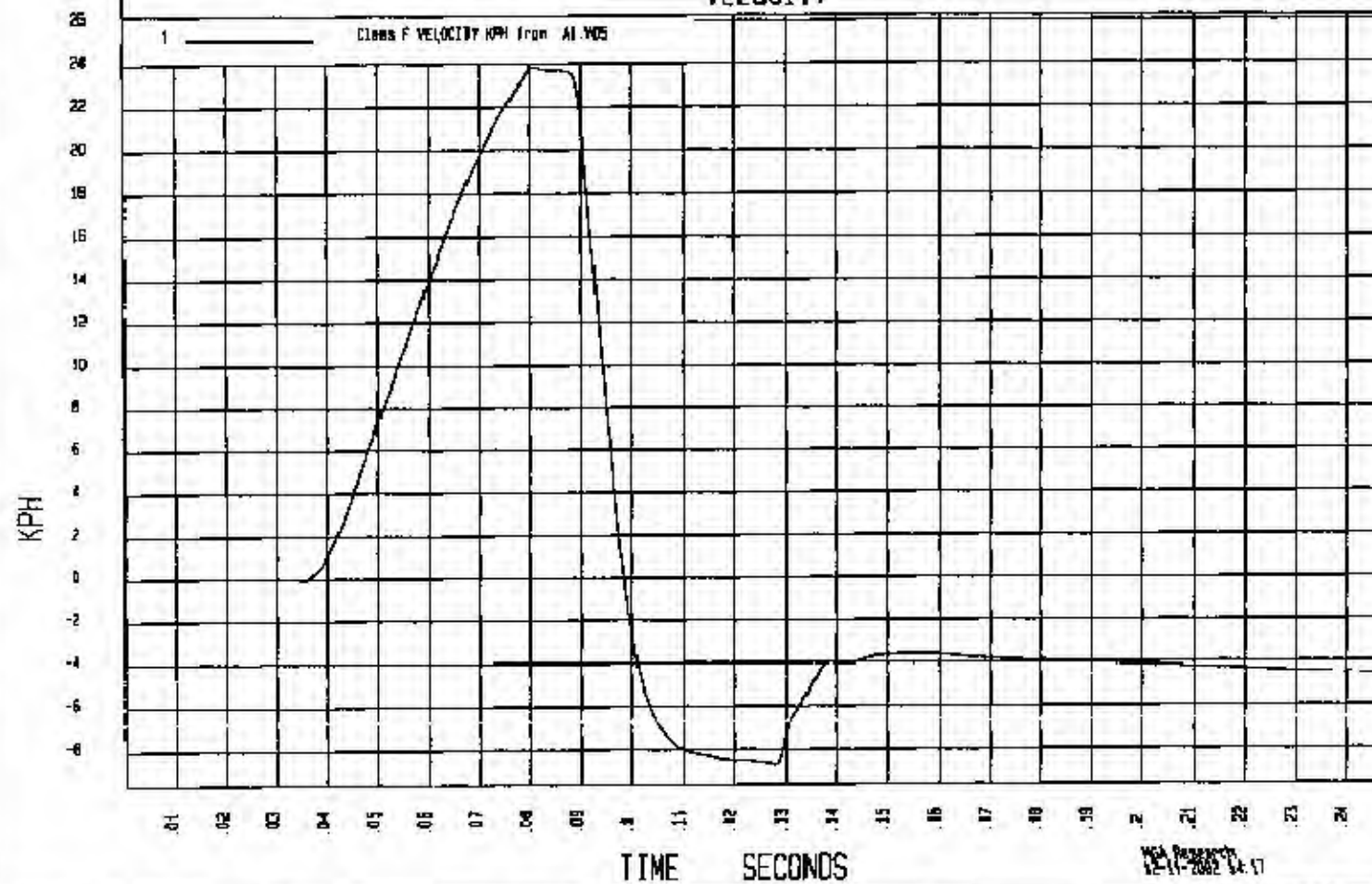
TEST: 2003 PONTIAC VIBE FMVSS 2010. 60315-001.2. 12/11/02

COMPONENT: TEST #10 (FM2394), L/S UR2, H/V=270/34

YMIN=-8.13658 KPH at 127. msec

YMAX= 23.8572 KPH at 80.7 msec

### VELOCITY



MCA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

2/10/02

TEST #5  
(TAXI389)

RIGHT LRA  
147 - 90/50

PRE-TEST



105  
2380  
UR4  
30

ALCA RESEARCH CORP  
EMY 85 2011 TESTING  
2003 PONTIAC WIRE

C00105

32/10/02

TEST #5

RIGHT UR4

ITEM 189

WT = 90.50

POST-TEST

MGA RESEARCH CORP  
FMVSS 201U TESTING  
2003 PONTIAC VIBE

C30105

12/10/02

TEST #5  
(FM2389)

RIGHT UR4  
H/V = 90/50

POST-TEST



MICHIGAN OPERATIONS  
DATE: 10/18/01  
SUPERCEDES: MGATP201U\_FRAME #23

DOC. NO.: MGATP201U\_FRAME #2  
REVISION NO.: 4  
PAGE 9 of 9

### SUMMARY OF FMVSS 201U TEST

JOB/NHTSA NO: C30106 VEHICLE YR/MAKE/MODEL: 20003 FORD V136

#### GENERAL TEST PARAMETERS:

Test Number: 5

Target (Vehicle Side): left/right URY

Temperature: 74 °C

MGA Test Reference No.: FM2389

Humidity: 22 %

Approach Angles: Horizontal 90 °

Time of Test: 4:44 am/pm

Vertical 50 °

FMH Serial No: 36

#### TEST RESULTS:

HIC(d)	HIC	Δt (msec)	Velocity (kph)	Impact location on FMH (mm)	
				Above Pt. O	Left/Right Pt. O
615	594	8.3	23.7	34	3

INSTRUMENTAION INFORMATION: (all accelerometers are Endevco 7264-2000)

AxIs	Channel	Serial No.	DLR Value	ΔV Pre-Test	ΔV Post-Test
X	5	J35923	100.9	1.21	1.21
Y	6	J35916	100.7	1.23	1.23
Z	7	J35918	100.8	1.51	1.51

REMARKS (Summary of test, damage, non-compliance, Invalid test, etc.):

NO VISIBLE DAMAGE

Recorded By: [Signature] Approved By\*: [Signature] Date: 12/14/02

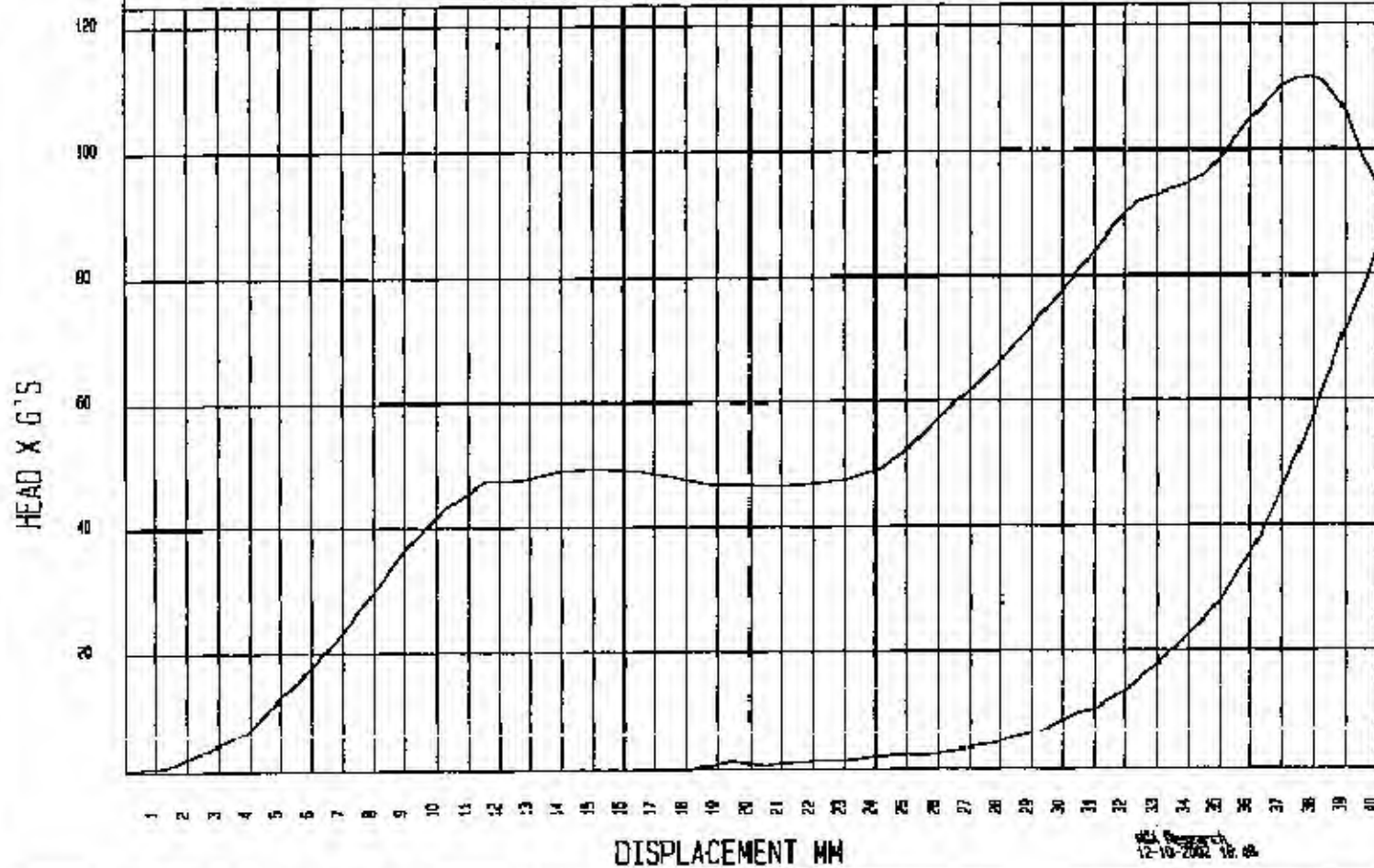
\* Only necessary for NHTSA (Government) Compliance testing.

```
*****
RESULTS OF HIC36 PROGRAM
*****
The input file is \NHTSA\FM2389AV.A05
The HIC = 593.79 calculated over 8.3 msec
T1 = 4.18 msec T2 = 12.45 msec
*****
HIC(d) = 615
Impact Velocity = 23.7 (kph)
```

TEST: 2003 PONTIAC VIBE FMVSS 2010, G03I5-001.2, 12/10/02

COMPONENT: TEST #5 (FM2389), R/S UR4, H/V=90/50

HEAD X as a function of DISPLACEMENT



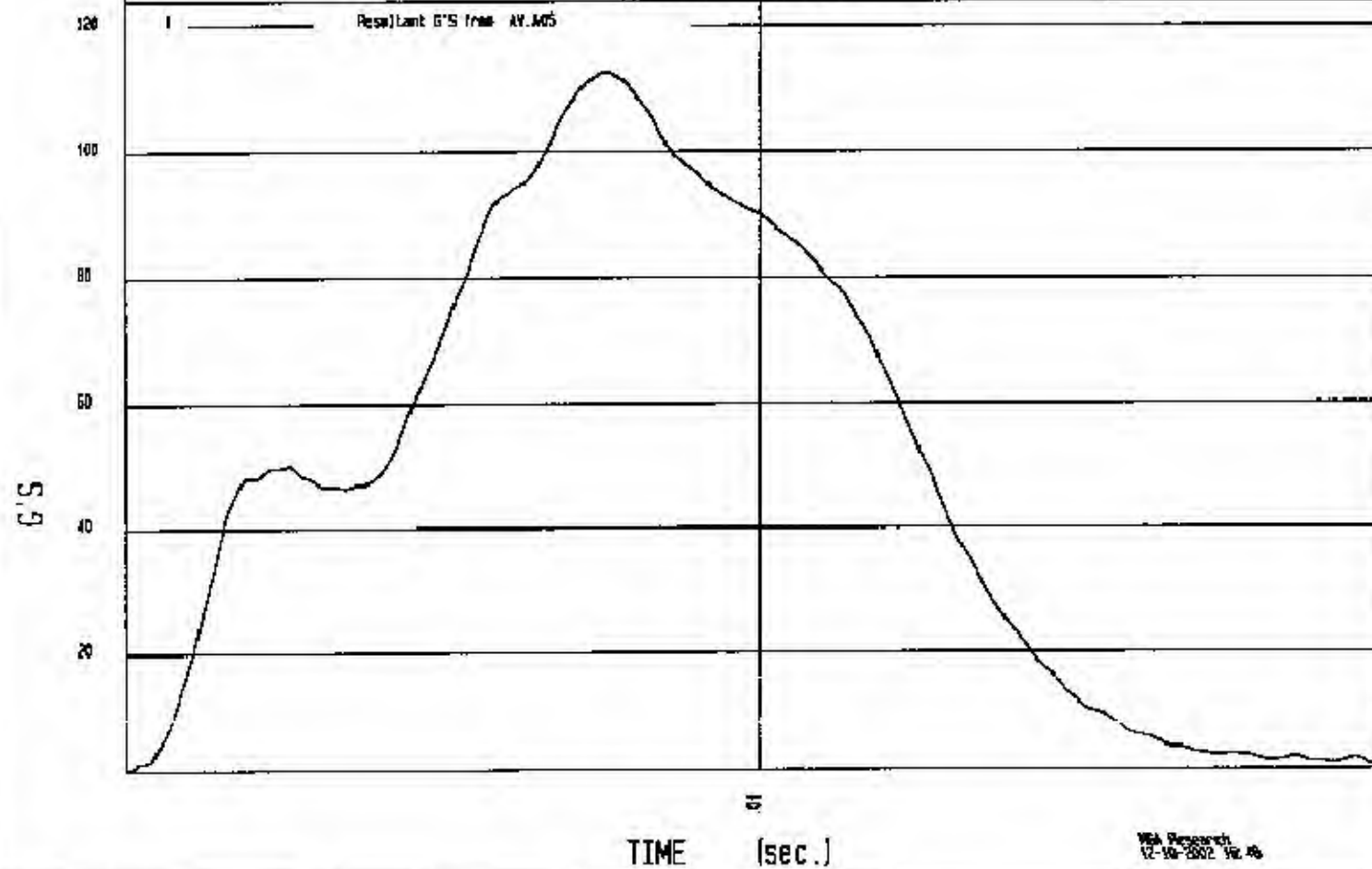
TEST: 2003 PONTIAC VIBE FMVSS 201U, G0315-001.2, 12/10/02

COMPONENT: TEST #5 (FM2389), R/S UR4, H/V=90/50

YMIN= 1.721982 G'S at 9.93 msec

YMAX= 112.5434 G'S at 7.56 msec

### FMH RESULTANT





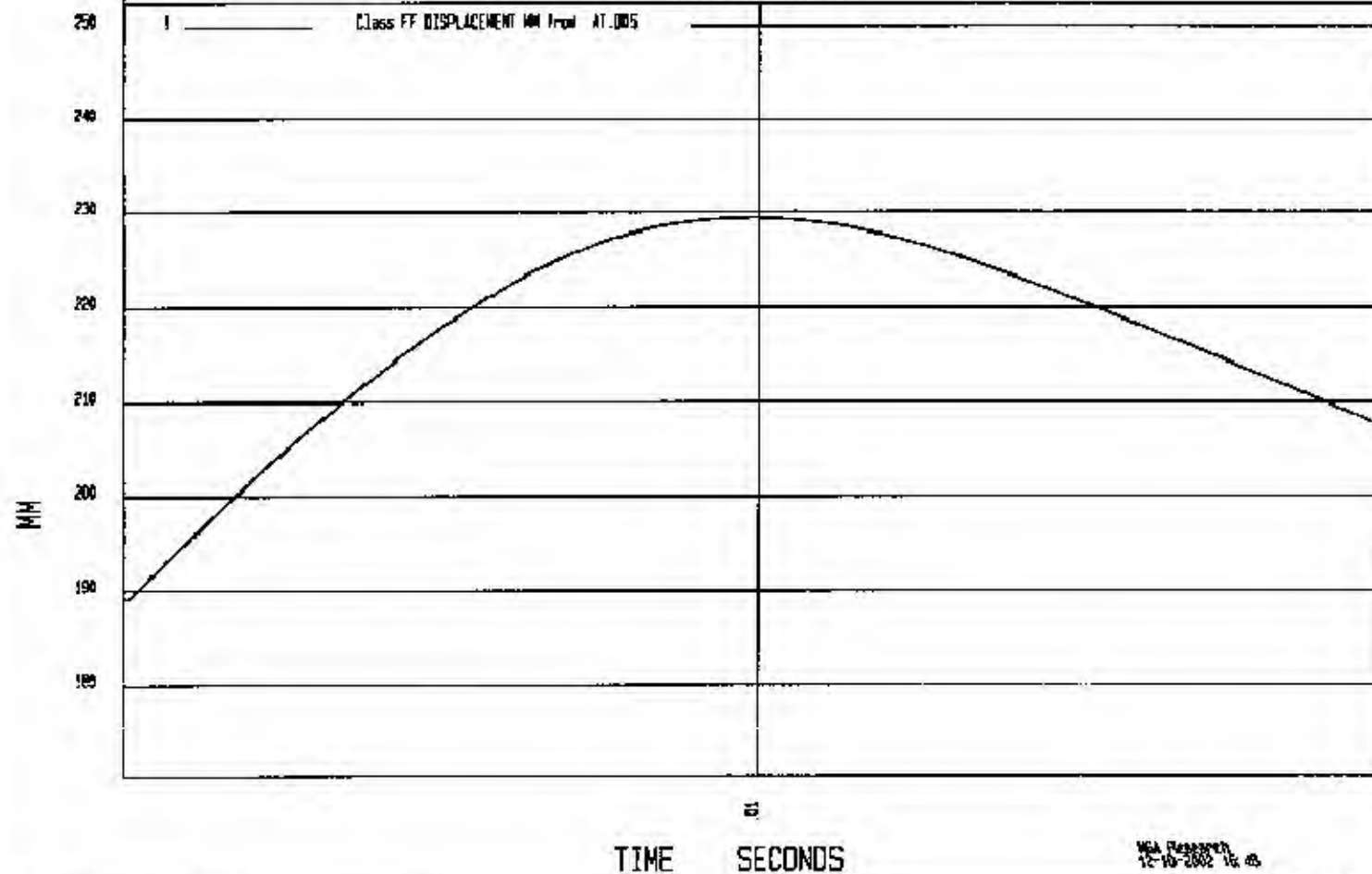
TEST: 2003 PONTIAC VIBE FMVSS 201U, 60315-001.2, 12/10/02

COMPONENT: TEST #5 (FM2389), R/S UR4, H/V=90/50

YMIN= 189.1762 MM at .009 sec

YMAX= 229.3961 MM at 9.05 sec

### DISPLACEMENT

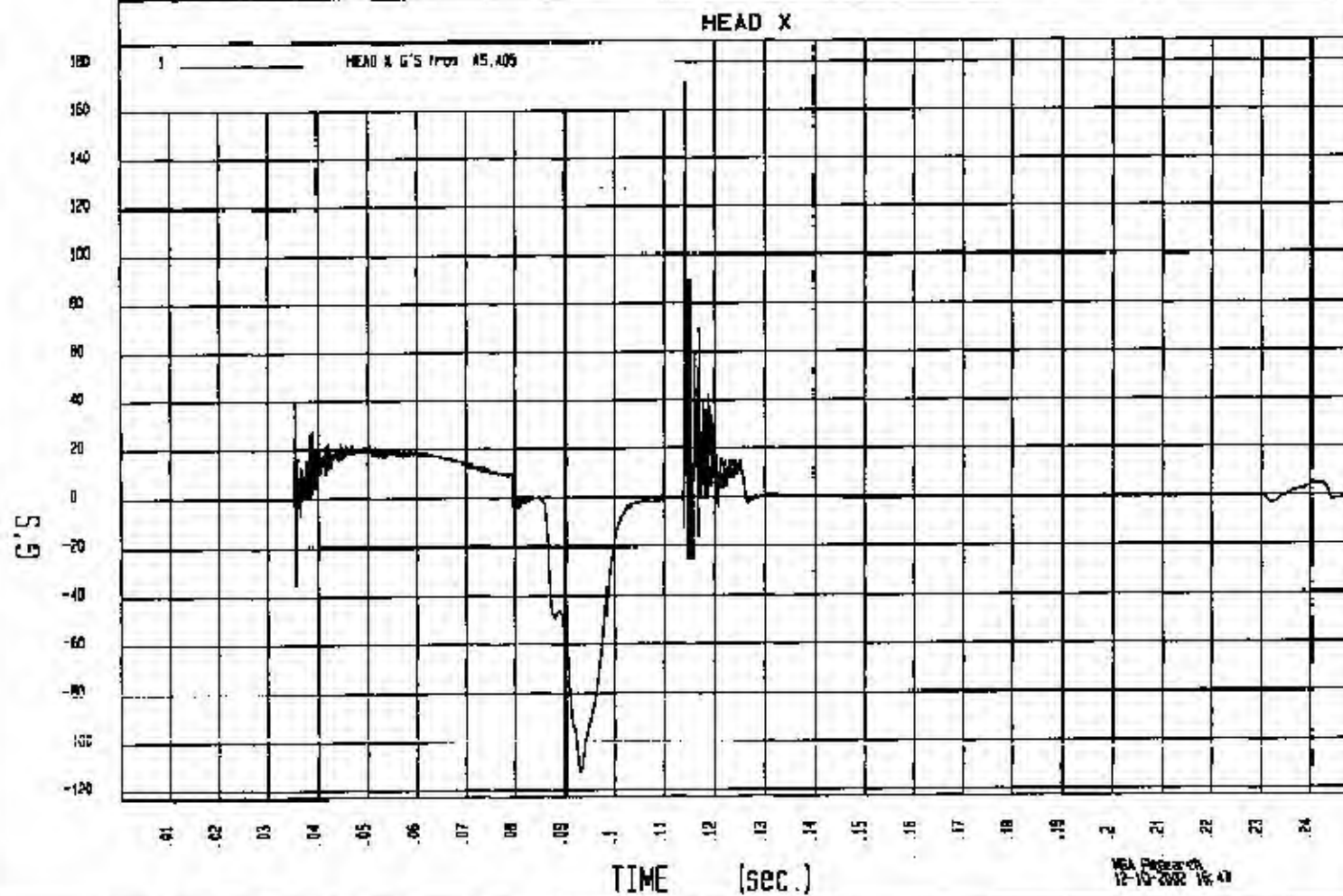


TEST: 2003 PONTIAC VIBE FMVSS 201U, G0315-001.2, 12/10/02

COMPONENT: TEST #5 (FM2389), R/S UR4, H/V=90/50

YMIN=-111.8608 G'S at 93.0 msec

YMAX=171.3108 G'S at 114. msec



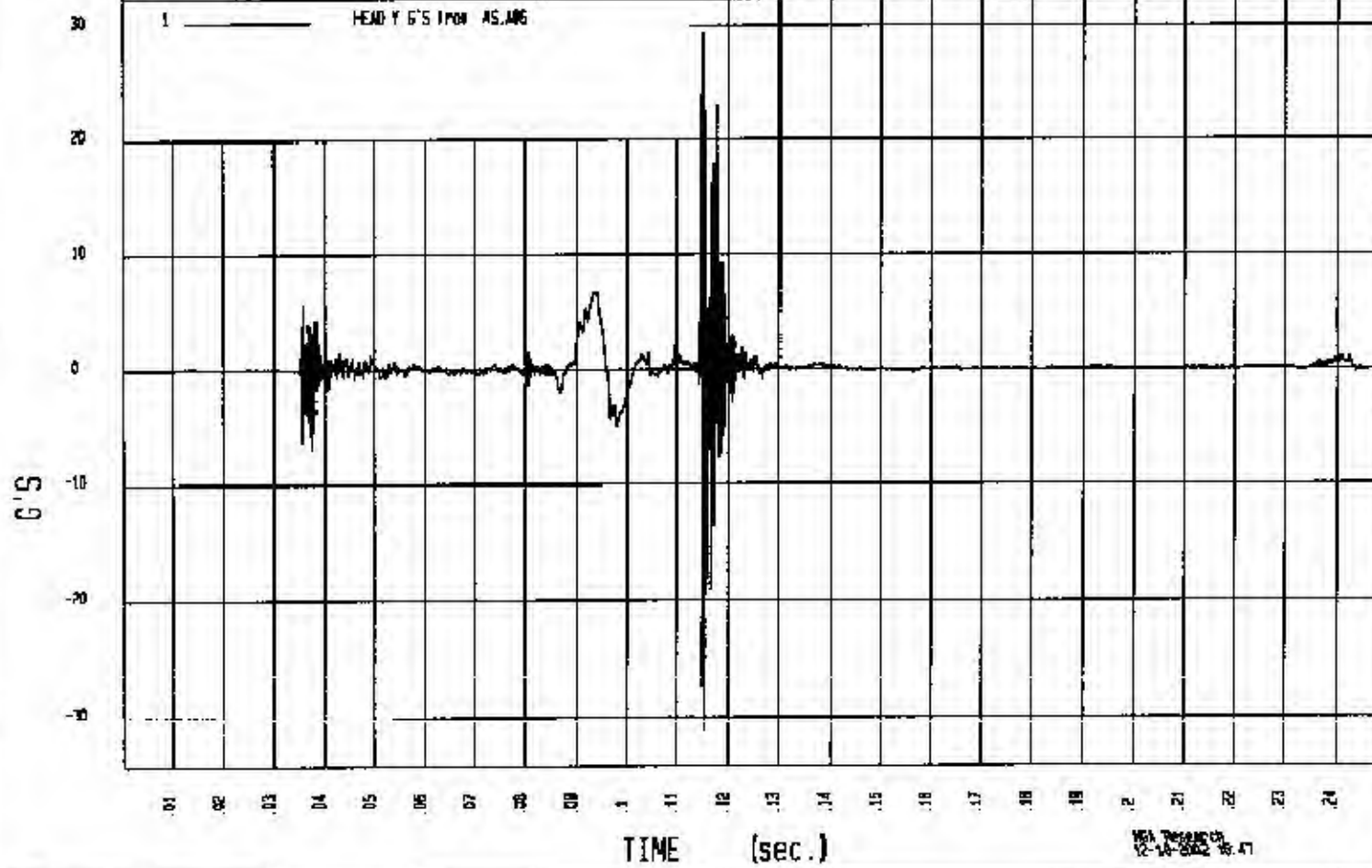
TEST: 2003 PONTIAC VIBE FMVSS 2010, 603I5-001.2, 12/10/02

COMPONENT: TEST #5 (FM2389), R/S UR4, H/V=90/50

YMIN=-31.15145 G'S at 115. msec

YMAX=29.36673 G'S at 115. msec

HEAD Y

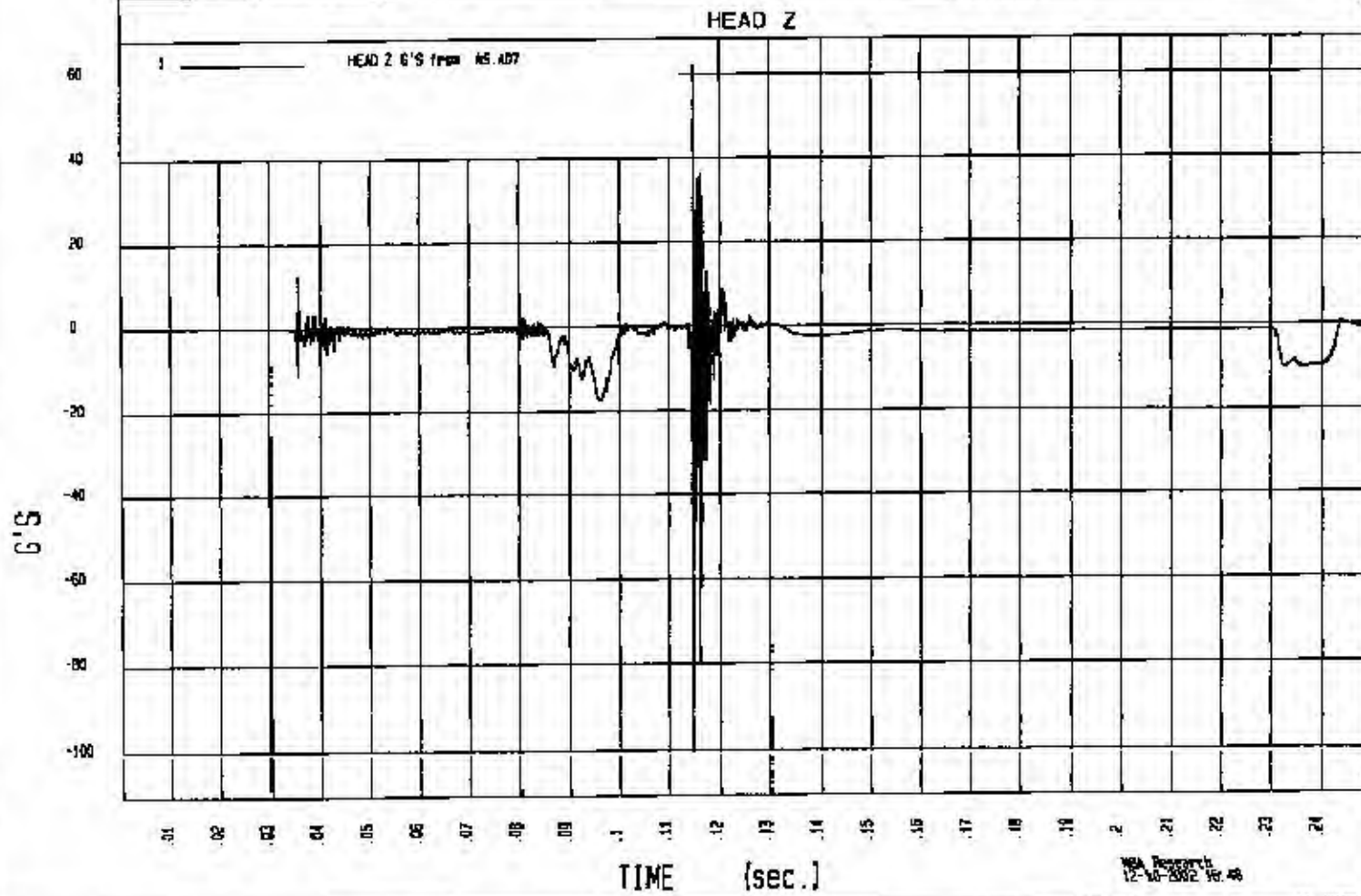


TEST: 2003 PONTIAC VIBE FMVSS 2010, G0315-001.2, 12/10/02

COMPONENT: TEST #5 (FM2389), R/S UR4, H/V-90/50

YMIN=-100.8532 G'S at 114. msec

YMAX= 51.96709 G'S at 114. msec





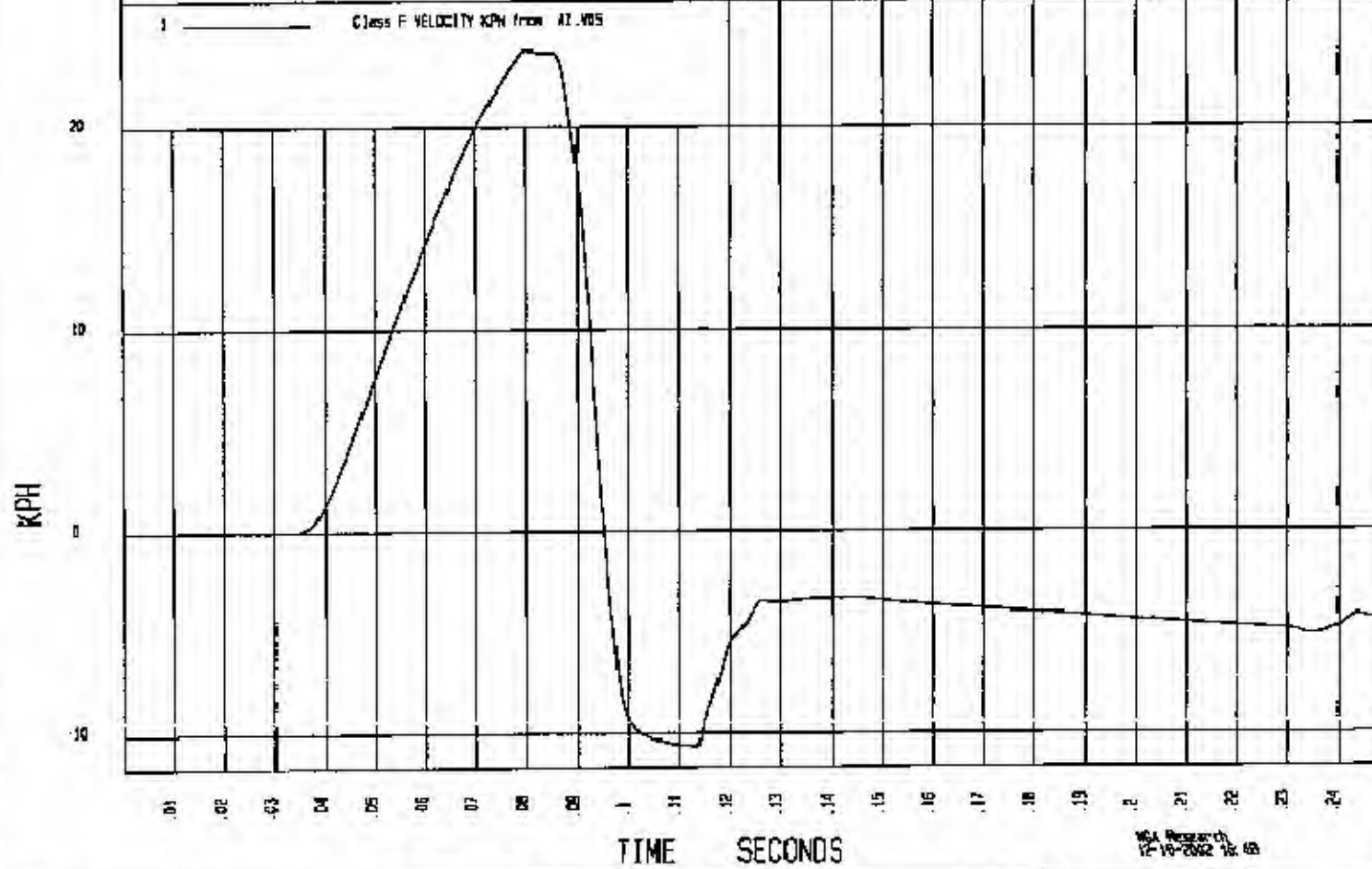
TEST: 2003 PONTIAC VIBE FMVSS 201U, G03I5-001.2, 12/10/02

COMPONENT: TEST #5 (FM2389), R/S UR4, H/V-90/50

YMIN=-10.61597 KPH at 113. msec

YMAX= 23.80869 KPH at 79.9 msec

### VELOCITY



#### 4.0 TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

The following section lists the test equipment for the compliance test series. Items marked with an asterisk are calibrated by an external lab. An additional summary table is given for the pre and post-test calibration data for the Free Motion Headforms. The temperature trace to confirm testing was conducted between 66°F and 78°F (19°C - 26°C) is included in Appendix A.

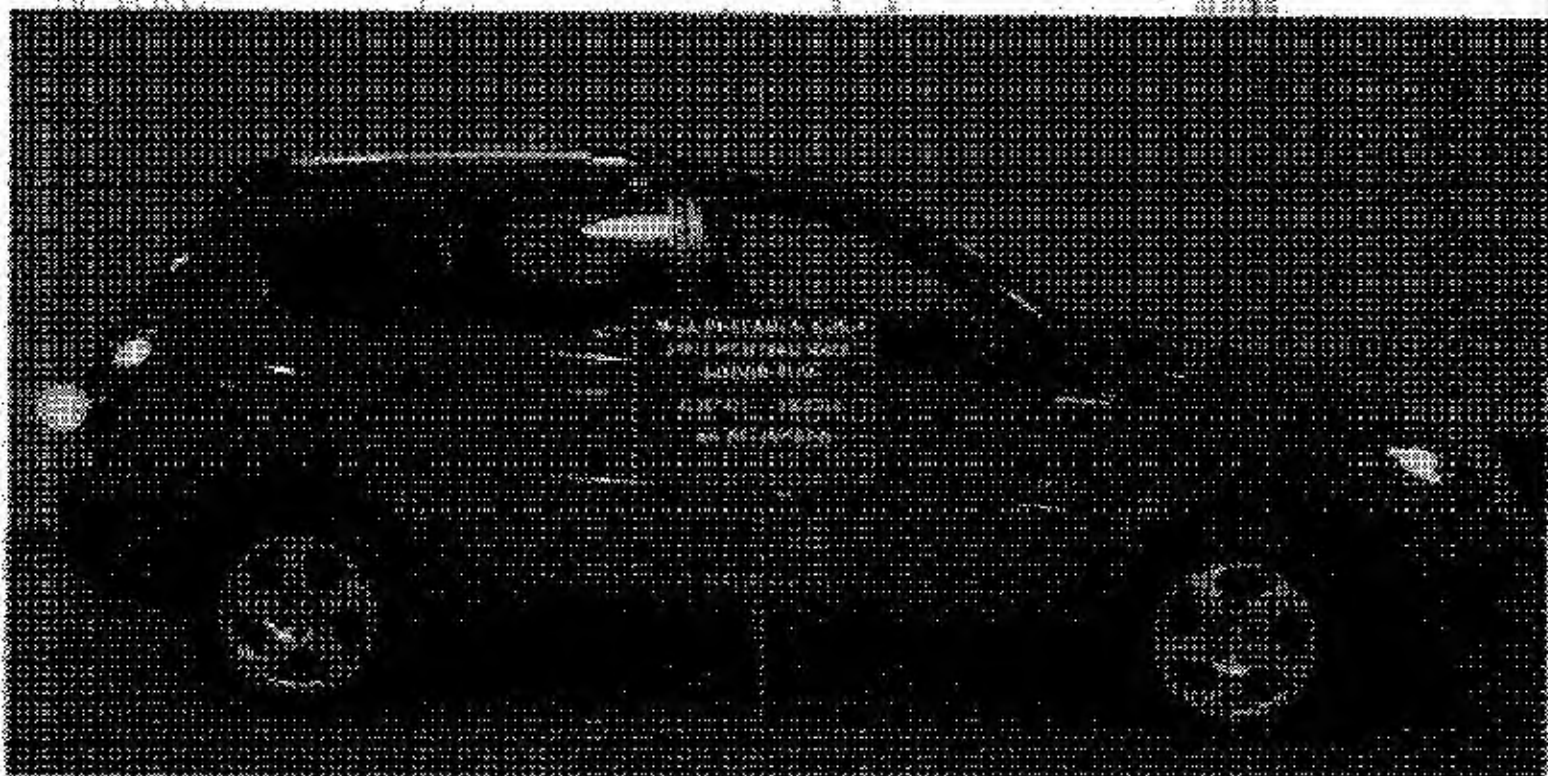
TABLE 4-1 LIST OF ITEMS USED

ITEM	MANUFACTURER NAME	MODEL #	FUNCTION OF ITEM	ACCURACY	CAL. INTERNAL
Head Drop Tower (includes test frame and DAS)	MGA Research Corp.	MGA-100-DC	FMH Calibration	N/A	N/A
Accelerometers	Endevco	7264-2000	Acceleration Data	±0.5%	6 months
*Digital Inclinometer	Macklenburg-Duncan	PRO 360	Set Angle of FMH/Targeting	0.1°	Annual
FMVSS 201U Test Frame (includes the propulsion control system, actuator, test frame, and DAS)	MGA Research Corp.	MGA-100-FMH	Test System	N/A	N/A
Free Motion Headforms	UTAMA UTAMA UTAMA	035 036 038	Test Device	N/A	Pre and Post-Test Series
High Speed Video	Kodak	RO1000	Record Event	N/A	N/A
*FARO™	Faro Technologies	S08/REV 18	Targeting	0.1 mm	Annual
Measuring Devices: - Tape Measure - Plumb Bobs - Protractor	Stanley N/A Craftsman	33-215 — —	Measurement Targeting FMH setup Horizontal Measurement	1 mm N/A 0.5°	Annual
*Vehicle Scale 9804-022/9805-176	Cardinal	8950F	Weighing Vehicle	± .5 kg	Annual
* Scale	Detecto	AP-20	Weigh FMH Head	± 0.01 lb	Annual
*Temperature Recorder	Dickson	TL120	Record Temperature and Humidity	± .5°C ± 1% RH	Annual

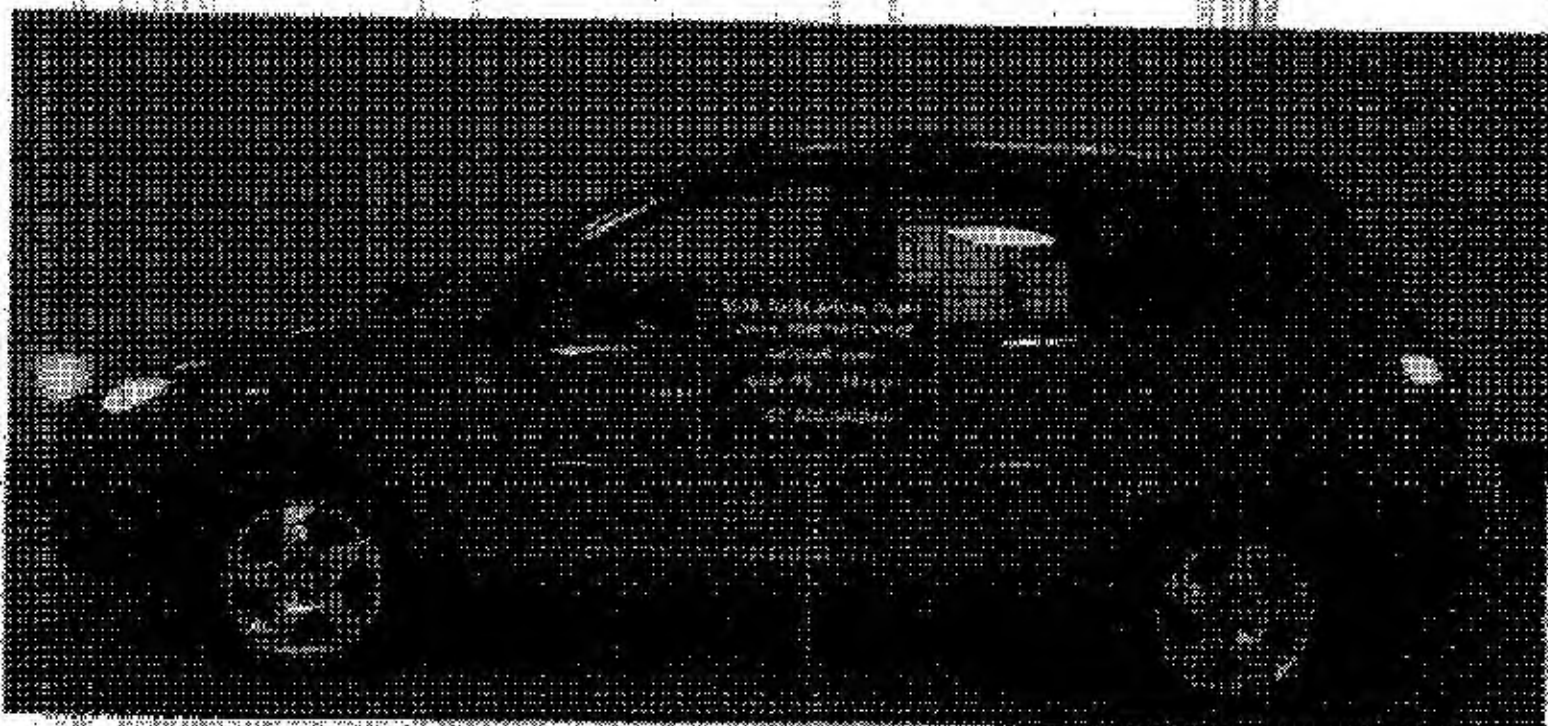
**TABLE 4-2 FMH CALIBRATION SUMMARY DATA SUMMARY TABLE**

FMH Serial #		Weight (lbs)	Temp (°C)	% Humidity	Peak Resultant Acceleration (G's)	Peak Lateral Acceleration (G's)	Unimodal
Pre	#35	10.02	23.0	22.0	240.9	14.2	Yes
Post	#35	10.02	23.0	23.0	233.8	8.8	Yes
Pre	#36	10.03	23.0	22.0	250.3	6.6	Yes
Post	#36	10.03	23.0	23.0	254.6	7.0	Yes
Pre	#38	9.99	23.0	22.0	245.8	9.9	Yes
Post	#38	9.99	23.0	23.0	252.6	9.0	Yes

Calibration certificates and headform calibration information can be found in the P572L Performance Calibration report which accompanies this report.









INEL RESEARCH CORP  
2003 PONTIAC VIBE  
1 DOOR SUV

CA0105 12-5-02

AS DELIVERED



MOA RESEARCH CORP  
2000 PONTIAC VIBE  
4 DOOR SUV  
200105 172002  
AS DELIVERED

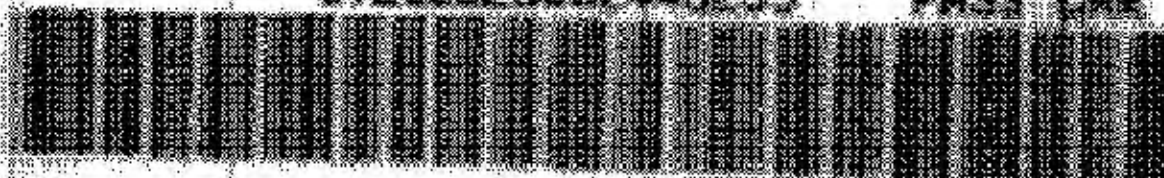
MFD BY: NEW UNITED MOTOR MANUFACTURING  
INC. 09/02

GWR 2645LB GAWR FR 2015LB RR 1350LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE  
FEDERAL MOTOR VEHICLE SAFETY BUMPER AND  
THEFT PREVENTION STANDARDS IN EFFECT ON  
THE DATE OF MANUFACTURE SHOWN ABOVE.

5Y2SLG23237440235

PASS CAR



BA305H25



VEHICLE CAPACITY WEIGHT: 8601bs (390kg)  
 DESIGNATED SEATING CAPACITY: TOTAL 5 (FRONT 2, REAR 3)  
 RECOMMENDED COLD TIRE INFLATION PRESSURE: psi (kPa)  
 UP TO VEHICLE CAPACITY WEIGHT FRONT 32 (220), REAR 32 (220)  
 RECOMMENDED TIRE SIZE: P205/55R16 89H, P215/50ZR17  
 COMPACT SPARE TIRE  
 RECOMMENDED COLD TIRE INFLATION PRESSURE: 60psi (420kPa)  
 RECOMMENDED TIRE SIZE: T135/70R16 100M (FOR P205/55R16 89H)  
 T135/80R16 101M (FOR P215/50ZR17)  
 SEE OWNER'S MANUAL FOR ADDITIONAL INFORMATION

CHARGE MAXIMALE DU VEHICULE: 860LIVRES (390kg)  
 NOMBRE DESIGNÉ DE PLACES ASSISES: TOTAL 5  
 (AVANT 2, ARRIERE 3)  
 PRESSION RECOMMANDEE DE GONFLAGE A FROID DES PNEUS  
 AU POIDS MAXIMAL DU VEHICULE CHARGE: LB/PO<sup>2</sup> (kPa)  
 AVANT 32 (220), ARRIERE 32 (220)  
 DIMENSION RECOMMANDEE DES PNEUS: P205/55R16 89H, P215/50ZR17  
 PNEU DE RECHANGE COMPACT  
 DIMENSION RECOMMANDEE DU PNEU: T135/70R16 100M (POUR P205/55R16 89H)  
 T135/80R16 101M (POUR P215/50ZR17)  
 PRESSION RECOMMANDEE DE GONFLAGE A FROID: 60LB/PO<sup>2</sup> (420kPa)  
 POUR DE PLUS AMPLES DETAILS, VOIR LE MANUEL DU PROPRIETAIRE

01090

B1

MCA RESEARCH CORP  
FMVSS 2012 TESTING  
2003 PONTIAC VIBE

C30105

12/10/02

PRE-TEST COMPONENT

MOBILE SEARCHED  
INDEXED 2000 31/10/00  
2000 PONTIAC VIBE  
C30106 12/10/02  
PRE-TEST COMPONENT



ANALYST REPORT  
FBI LAB 2011-10-10  
2003 PORTAL VIEW

CWIS

12-11-03

REVIEW (COMBINATION)



NUCLEAR RESEARCH UNIT  
FACULTY OF DISTANCE  
EDUCATION

1980

1982

PROTESTANT CHURCH

HICA RESEARCH CORP  
FMVSS 201C TESTING  
2003 PONTIAC VIBE

C39103

12-16-02

PRE-TEST COMPONENT

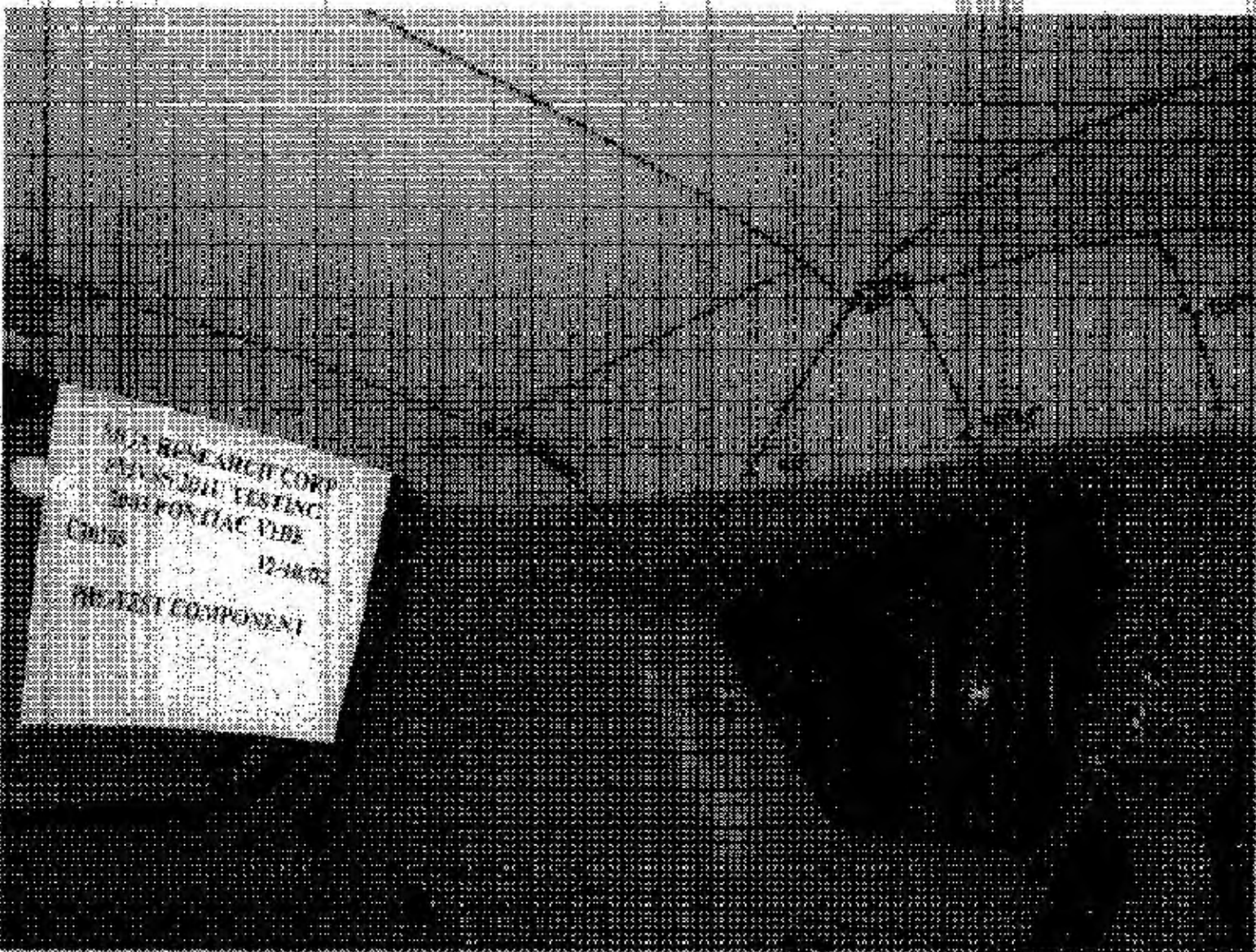




MR. J. R. RESEARCH CORP.  
EVALUATION TESTING  
DRY POWDER VIB.  
C30105 12.10.65  
PRE-TEST COMPONENT







MGAR RESEARCH CORP  
ENVIS 202U TESTING  
200 POSTLAC VIRE  
C30105 12/11/02  
POST-TEST COMPONENT



ALFA RESEARCH CORP  
FATIGUE LIFE TESTING  
2003 PONTIAC VIBE  
C2005 12/11/03  
FUSE TEST COMPONENT

MCA RELEASE CUBP  
PMYSS 2811 11-1-1977  
2000 PONTIAC DR  
E76108 12-7-1972  
POST-TEST COMPONENT

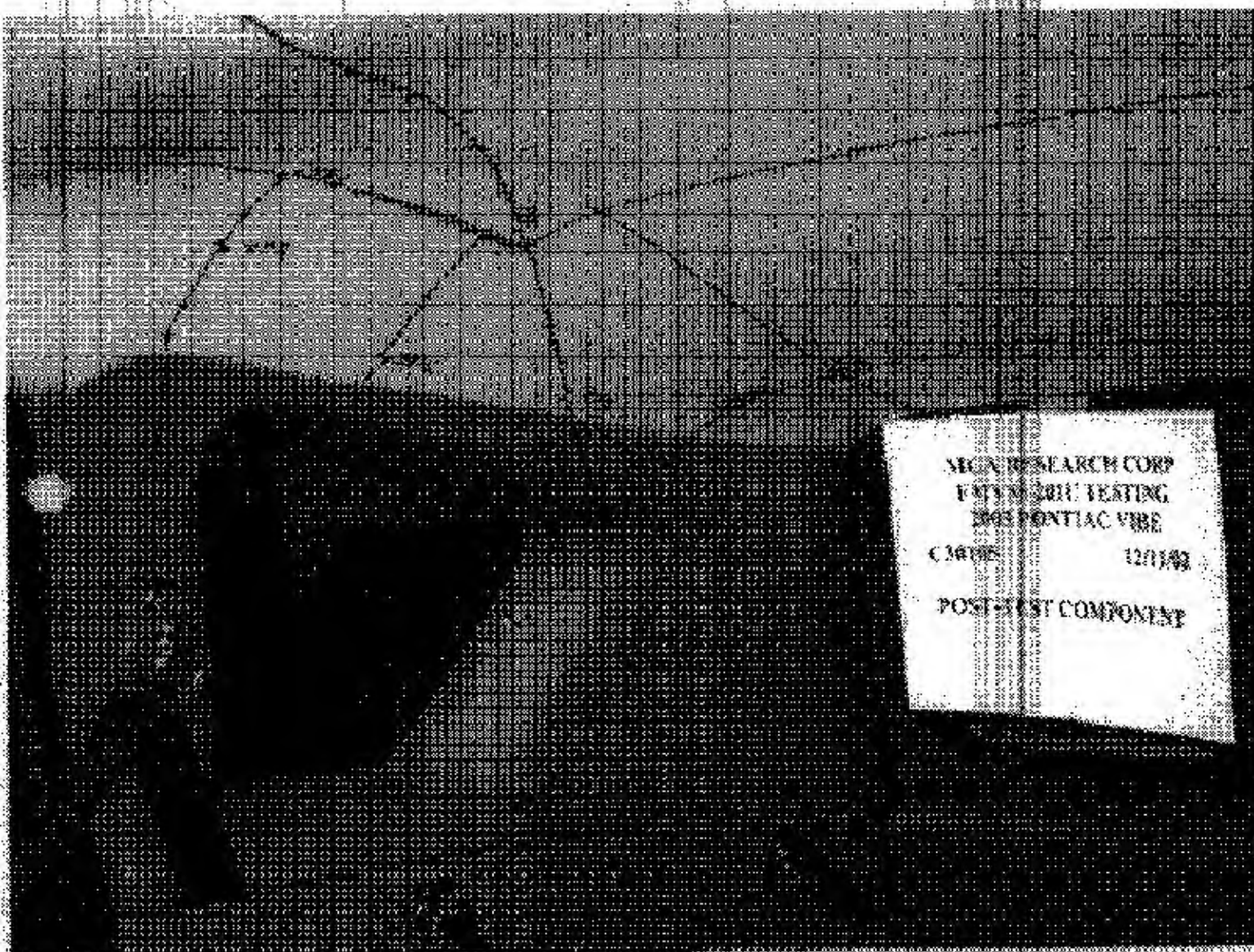


MGA REPAIR CORP  
EMVSS 2017 TESTING  
2003 PONTIAC VIBE  
C30105 12/1/02  
POST-TEST COMPONENT

MCA RESEARCH CORP  
FMVSS 2011 TESTING  
2015 PUNTLAC VIO  
C30105 15 F102  
POST-TEST COMPONENT

MILITARY RESEARCH CORP  
ADVANCED TESTING  
2003 PRESTIGE  
C30100 12/31/02  
NOSE FEEL COMPONENT





MECA RESEARCH CORP  
FATIGUE CRACK TESTING  
2003 PONTIAC VIBE

C3608 12/1/03

POST-TEST COMPONENT



MGA RESEARCH CORP  
PHYS 201E TESTING  
2003 PONTIAC VIBE

C3005 12/11/02

POST-TEST COMPONENT

### C30105 Temperature Trace 12/10-12/02

